



Oregon

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September 9, 1998

Mr. Howard R. Canter
Acting Director
Office of Fissile Materials Disposition
US Department of Energy
PO Box 23786
Washington, DC 20026-3786

Re: Oregon Office of Energy's Comments on Surplus Plutonium Disposition Draft
Environmental Impact Statement

Dear Mr. Canter,

Thank you for the opportunity to comment on the Surplus Plutonium Disposition Draft
Environmental Impact Statement (EIS). The citizens of the State of Oregon are vitally
interested in this issue from both a regional and international perspective.

Our most urgent concerns are:

Hanford has been described as the most contaminated site in the Western Hemisphere. A
review of table 2-4 in the EIS also shows that in nearly all cases, siting any portion of the
surplus plutonium mission at Hanford results in a measurably greater human health risk
than conducting the mission at another site. As a result, we recommend that cleanup
remain Hanford's only mission and Hanford not be considered for any task related to
surplus plutonium disposition.

The use of Mixed Oxide (MOX) fuel in the Hanford Fast Flux Test Facility reactor or in
any other Department of Energy or commercial reactor to produce tritium for nuclear
weapons represents a weapons use of surplus weapons plutonium and must not be
considered as an option. This appears to violate the spirit of our agreement with the
Russians to remove this plutonium from the weapons cycle.

The EIS does not consider the environmental impacts of burning MOX fuel in
commercial reactors as part of the MOX option. Until these impacts are analyzed, it is
impossible to make a rational choice between the hybrid alternative and the total
immobilization alternative.

The EIS assumes a geologic repository for immobilized plutonium will be available. The
validity of this assumption is highly suspect. The completion of work on Yucca
Mountain has been delayed time and time again and there is no reason to anticipate any

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MD170-1

Alternatives

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. Although there may be differences in human health risk factors between the sites, the differences are not large enough to be a discriminating factor in the decisionmaking process. DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

MD170-2

DOE Policy

DOE acknowledges the commentor's opposition to using MOX fuel in DOE or commercial reactors to produce tritium for nuclear weapons. As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. In December 1998, the Secretary of Energy decided that FFTF would not play a role in producing tritium. Furthermore, MOX fuel in domestic, commercial reactors would not be used to produce tritium.

MD170-3

MOX Approach

The SPD Draft EIS used a generic reactor analysis because the specific reactors had not yet been identified. DOE conducted a procurement process to acquire MOX fuel fabrication and irradiation services. As a result of this procurement process, DOE identified the reactors proposed to irradiate MOX fuel as part of the proposed action in this EIS. Section 4.28 discusses the potential environmental impacts of operating the reactors, should the decision be made to proceed with the hybrid approach (i.e., immobilization and MOX fuel fabrication).

MD170-4

Repositories

This SPD EIS assumes, for the purposes of analysis, that Yucca Mountain, Nevada would be the final disposal site for all immobilized plutonium and MOX spent fuel. As directed by the U.S. Congress, through the NWPA, as amended, Yucca Mountain is the only candidate site currently being characterized as a potential geologic repository for HLW and spent fuel.

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improvement in this performance. We recommend an analysis be done to determine the effects of long term storage of the immobilized plutonium at the candidate sites.

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The EIS analyses of the radiological consequences of accidents, construction and normal operations of the facilities proposed for Hanford under the various options were limited to a radius of 50 miles centered on Hanford. The presence of the Columbia River on the Hanford Site and the River's proximity to the major population centers of Oregon makes Hanford's situation unique. We recommend the analysis of radiological consequences be extended down the Columbia River at least to the John Day Dam.

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Attached are further specific comments on the EIS. Should you have any questions, please contact Douglas Huston of my staff at (503)378-4456.

Sincerely,



Mary Lou Blazek
 Administrator, Nuclear Safety Division
 Oregon Office of Energy

cc: Ms. Donna Powauke - Nez Perce Tribe
 Mr. J. R. Wilkerson - CTUIR
 Mr. Michael Wilson - Washington Ecology
 Mr. Douglas Sherwood - EPA
 Mr. Russell Jim - Yakama Nation

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DOE has prepared a separate EIS, *Draft Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (DOE/EIS-0250D, July 1999), which analyzes the environmental impacts from construction, operation and monitoring, related transportation, and eventual closure of a potential geologic repository. The *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (WM PEIS) (DOE/EIS-0200-F, May 1997) includes an analysis of the impacts of the long-term storage of 21,600 canisters of vitrified HLW. As described in Section 2.4.2, if all surplus plutonium were immobilized, the surplus disposition program would produce an additional 272 canisters using the ceramic process or 395 canisters using the glass process. For the hybrid approach, these totals are reduced to 101 canisters (ceramic) and 145 canisters (glass), respectively. Accordingly, potential impacts associated with storage of these canisters are not significant when compared with the much larger bases for analyses noted above.

MD170-5

Human Health Risk

Both DOE and NRC evaluate radiological impacts to the population out to a distance of 50 miles (80 kilometers) from a site. This distance was first specified in Paragraph D, Section II of Appendix I to 10 CFR 50. It had been determined that essentially all of the dose to the population would be received within this 50-mi (80-km) radius. Further, predictions of atmospheric dispersion beyond this distance are not accurate because of changes in wind direction and speed that take place over time and distance from the points of radiological releases.

There are not expected to be any liquid radioactive discharges as a result of normal surplus plutonium disposition activities at Hanford. If there were, due to the dilution capability of the Columbia River, as well as FMEF's distance from the Columbia River, there should be no discernible contamination of aquatic biota (fish) or drinking water resulting from surplus plutonium disposition activities at Hanford, either from minute quantities of air deposition into the Columbia River or from any potential wastewater releases. Therefore, it is estimated that no measurable component of the public dose would be attributable to liquid pathways.

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Section 1.1, Background, reserves the CANDU option for burning of Mixed Oxide (MOX) fuel. The Oregon Office of Energy opposes this based on recently revealed technical and financial problems associated with the CANDU reactors and increased proliferation risks.

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Section 1.5 states that the Department Of Energy (DOE) is deferring the examination of the impacts and costs of final shutdown, cleanup and demolition of these facilities to some later Environmental Impact Statement. It is essential that these factors be considered in this Environmental Impact Statement in order to make an informed, reasonable analysis of the various options.

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Section 1.7 asserts that waste will be disposed in accordance with decisions reached in various Records of Decision issued for the Waste Management Programmatic Environmental Impact Statement. This document was widely criticized for its inadequacy and we recommend that in making decisions concerning the fate of surplus plutonium disposition waste DOE take these criticisms into account.

8

In Section 2.3.1, Development of Facility Siting Alternatives, the criteria used to reduce possible facility and site combinations do not contain waste capacity/handling criteria. Would the site be able to handle and accommodate the amount and types of waste expected to be generated by these processes? We recommend that these criteria be added and the various candidate sites evaluated against them.

9

In several places, the Surplus Plutonium Disposition Environmental Impact Statement (EIS) contains statements about designing facilities to withstand natural phenomena such as earthquakes and tornadoes. Specifically what design criteria will be used, the Nuclear Regulatory Commission's (NRC), DOE's, state, or commercial standards? The Oregon Office of Energy recommends that the criteria to be used be specifically stated in the EIS. At a minimum, these standards should be set to the most conservative of the standards specified by the DOE, NRC, or commercial standards.

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The EIS also does not discuss what general building and fire codes will be used in the construction of the various proposed facilities. These issues need to be discussed in the EIS. The EIS should specify compliance with the appropriate state and national codes.

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For Hanford, the current Tank Waste Remediation System (TWRS) Privatization Contract does not include provisions for surplus plutonium disposition canister filling as described in Section 2.4.2.2.2, Immobilization Process. The impacts of this strategy on the TWRS Privatization contract should be evaluated and discussed.

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Parallex EA

In the SPD Draft EIS, DOE retained the option to use some of the surplus plutonium as MOX fuel in CANDU reactors, which would have only been undertaken in the event that a multilateral agreement were negotiated among Russia, Canada, and the United States. Since the Draft was issued, DOE determined that adequate reactor capacity is available in the United States to disposition the portion of the U.S. surplus plutonium that is suitable for MOX fuel and, therefore, while still reserving the CANDU option, DOE is no longer actively pursuing it. However, DOE, in cooperation with Canada and Russia, proposes to participate in a test and demonstration program using U.S. and Russian MOX fuel in a Canadian test reactor. A separate environmental review, the *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999), analyzes the fabrication and proposed shipment of MOX fuel rods for research and development activities involving the use of limited amounts of U.S. MOX fuel in a Canadian test reactor. A FONSI was signed on August 13, 1999. Both of these documents can be viewed on the MD Web site at <http://www.doe-md.com>. If a decision is made to dispose of Russian surplus plutonium in Canadian CANDU reactors in order to augment Russian's disposition capability, shipments of the Russian MOX fuel would take place directly between Russia and Canada.

MD170-7

General SPD EIS and NEPA Process

D&D is discussed in Section 4.31. DOE will evaluate options for D&D or reuse of the proposed facilities at the end of the surplus plutonium disposition program. At that time, DOE will perform engineering evaluations, environmental studies, and further NEPA review to assess the consequences of different courses of action. Because cost issues are beyond the scope of this SPD EIS, this comment has been forwarded to the cost analysis team for consideration. The *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998) report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at <http://www.doe-md.com> and in the public reading

rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

MD170-8**Waste Management**

The statement that waste would be disposed of in accordance with decisions reached in the various WM PEIS RODs was included in this SPD EIS to assure the reader that waste management activities would be handled in a manner consistent with the larger decisions being made in the WM PEIS. Comments on the WM PEIS are beyond the scope of this SPD EIS.

MD170-9**Waste Management**

Impacts to waste management from the various alternatives for surplus plutonium disposition are described in the Waste Management sections in Chapter 4 of Volume I and Appendix H. None of the proposed alternatives would be expected to generate wastes that exceed current site capabilities with the exception of LLW and TRU waste at Pantex as described in the Pantex waste management sections (e.g., see Section 4.17.2.2). Decisions on the surplus plutonium disposition program will be based on environmental analyses (including analyses of waste management impacts), technical and cost reports, national policy and nonproliferation considerations, and public input.

MD170-10**Facility Accidents**

As described in Appendix K.1.3.2, the proposed facilities for surplus plutonium disposition would be expected to meet or exceed the requirements of DOE Order 420.1, *Facility Safety* (October 1995), and *Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities* (DOE-STD-1020-94, April 1994), and for new construction, NRC requirements, as appropriate. For example, the MOX facility would meet the NRC requirements.

MD170-11**Infrastructure**

As stated in Section 5.1, it is DOE's policy to conduct its construction and operation activities in an environmentally safe manner in compliance with all applicable Federal, State, and local statutes, regulations, and standards.

MD170–12

Immobilization

As discussed in Section 2.4.2.2.2, DOE anticipates that the use of the HLW vitrification plant at Hanford to fulfill plutonium disposition requirements would likely result in minor impacts to the operations of the TWRS contractor. Additional provisions would primarily be in the form of increased worker shielding requirements, and any necessary changes to the planned TWRS facility design would be made prior to construction. Programmatically, although several hundred additional canisters would need to be produced to support the surplus plutonium disposition program, this would represent a relatively small increase to the more than 10,000 canisters already anticipated to be produced over the course of the Hanford HLW mission. Further, no additional vitrified HLW would be needed to accomplish immobilization activities at Hanford.

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There is no indication in this EIS that DOE will develop a comprehensive transportation plan in consultation with the appropriate corridor states and local tribes. We recommend that a comprehensive transportation plan be developed and that a statement to this effect be included in the EIS. 13

The EIS does not adequately discuss the technical properties of the immobilized plutonium. For example: What is the amount of plutonium in each unit of immobilized plutonium and how does this relate to a possible critical mass? How much shutdown margin does the immobilized waste form provide? We recommend that a discussion of the physical and nuclear properties of the immobilized plutonium be included in the EIS. 14

Section 2.4.3.1, MOX Facility Description, contains specific design details not included in the Statement of Work for the Request for Proposals for MOX Fuel Fabrication and Reactor Irradiation Services. These documents need to be reconciled. 15

The area required for various missions at Hanford seems to vary widely. For example: For immobilization, alternative 4b requires 6,698 square meters, and alternative 4a requires 13,694 square meters for the identical mission. These figures need to be clarified. 16

Further, alternative 6a states that 14,000 square meters is 150,700 square feet, and alternative 6b states that 14,000 square meters is 146,400 square feet. Actually 146,400 square feet is about 13,000 square meters. These figures need to be corrected.

Section 2.17.1, Process Description, states that about 100 kilograms of plutonium would be converted to MOX fuel from 321 kilograms of plutonium total. This varies significantly from the statement in the EIS Summary page S-19 that states that 100kg of plutonium would be converted to MOX from 600 kilograms of plutonium total during lead assembly fabrication. This discrepancy must be addressed. 17

The table on page 3-1 titled "Selected Characteristics of the Candidate Sites for Surplus Plutonium Disposition Facilities," does not contain units for the various numbers presented. These should be included. 18

The footnotes to Table 3-1 state that no sources of lead emission have been identified at Hanford. However, lead contaminated soil has been identified in the 300 Area burial ground. The source of this lead should be identified and a determination should be made if this soil or the source of its contamination constitute a lead emission source. 19

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MD170-13

Transportation

The shipment of nuclear material (e.g., depleted uranium) using commercial carriers would be the subject of detailed transportation plans in which routes and specific processing locations would be discussed. These plans are coordinated with State, tribal, and local officials. The shipment of waste would be in accordance with the decisions reached on the WM PEIS and *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997). The transportation of special nuclear materials is the subject of detailed planning with DOE's Transportation Safeguards Division. The dates and times that specific transportation routes would be used for special nuclear materials are classified information; however, the number of shipments that would be required, by location, has been included in this SPD EIS. Additional details are provided in *Fissile Materials Disposition Program SST/SGT Transportation Estimation* (SAND98-8244, June 1998), which is available on the MD Web site at <http://www.doe-md.com>.

MD170-14

Immobilization

Section 2.4.2.2.2 discusses the immobilization process and states that between 26 kg (58 lb) and 28 kg (61 lb) of plutonium would be present in the canisters that would be sent to a potential geologic repository. These estimates are based upon each canister containing 28 individual cans of plutonium-ceramic (with each can containing a plutonium loading of 10 percent by weight), or 20 cans of plutonium-glass (with each can containing a plutonium loading of 8 percent by weight). Numerous R&D studies of the immobilized plutonium forms have been conducted by DOE and the national laboratories, in part to ensure all environmental, health and safety requirements are met including criticality repository performance concerns. Several technical studies continue. In order to avoid the possibility of a criticality, neutron absorbers are incorporated into the fabrication of the plutonium-ceramic or plutonium-glass. Evaluations of the immobilized forms under a range of potential repository conditions, including if the material were in a degraded state and exposed to water, have been conducted. All have indicated that the occurrence of a criticality would be extremely unlikely given the amounts of plutonium relative to the amounts of neutron-absorbing materials that would be present.

“Shutdown margin” is a term generally used in association with controlling the reaction in a nuclear reactor and it is not applicable to the immobilization process; as such this parameter has not been analyzed relative to the immobilized form.

For enhanced readability of this SPD EIS, supporting documentation and detailed analyses of the chemical, physical, and nuclear properties of the immobilized forms were published separately. Information on specific technical aspects of the immobilized forms can be found in the following documents: (1) the immobilization data reports published in conjunction with this SPD EIS; (2) *Report on Evaluation of Plutonium Waste Forms for Repository Disposal* (DI: A-00000000-01717-5705-00009, Rev. 00A, March 1996); (3) *Report on Intact and Degraded Criticality for Selected Plutonium Waste Forms in a Geologic Repository, Volume II: Immobilized in Ceramic* (DI: BBA000000-01717-5705-00020, Rev. 01, October 1998); (4) *Immobilization Technology Down-Selection Radiation Barrier Approach* (UCRL-ID-127320, May 1997); and (5) *Fissile Material Disposition Program Final Immobilization Form Assessment and Recommendation* (UCRL-ID-128705, October 1997). These documents are available to the public at DOE sites and regional reading rooms; the latter two are also available on the MD Web site at <http://www.doe-md.com>.

MD170–15

MOX RFP

Section 2.4.3 contains information from supporting technical reports that show how the MOX facility would be constructed and operated at each candidate site. Those supporting reports, the SPD Draft EIS, and other relevant documents were made available to the prospective bidders during the MOX procurement process. There was no need to duplicate all the information in both the SPD EIS and the MOX RFP. This EIS has been revised to include information received and analyzed during the MOX procurement. Section 4.28 discusses the potential environmental impacts of operating the reactors that would use the MOX fuel.

MD170–16

Alternatives

The amount of space for the immobilization facility in FMEF differs depending on how it is configured—alone (Alternative 4A) or collocated with either the

pit conversion or MOX facility (Alternative 2 or 4B, respectively). Sections 2.6, 2.8, 2.12, and 2.15.1 were revised to discuss the revision in the size projections for the immobilization facility; the facility is larger than as characterized in the SPD Draft EIS, and when collocated in FMEF with either of the other two proposed facilities, requires an additional annex. Total space requirements still differ somewhat due to the amount and location of space available in FMEF and how the functions can be accommodated within the available space.

The editorial error in the conversion between square meters and square feet was corrected.

MD170-17**MOX Approach**

DOE cannot find this discrepancy in the SPD Draft EIS. Both Section 2.17.1 and page S-19 of the *Draft Summary* make the same statement that about 100 kg (220 lb) of plutonium would be made into MOX fuel each year, using a total quantity of 321 kg (708 lb) of plutonium.

MD170-18**Candidate Sites**

The subject table, Selected Characteristics of the Candidate Sites for Surplus Plutonium Disposition Facilities, contains units for the numbers presented. As shown in the column titles, areas are in square kilometers (km²), populations are in number of people, MEI doses are in millirems (mrem), and population doses are in person-rem.

MD170-19**Candidate Sites**

Table 3-1 addresses general regions of influence for the affected environment and does not have footnotes. Table 3-3, Comparison of Ambient Air Concentrations From Hanford Sources, describes process emissions and does not include possible existing lead contamination of soils. The condition of a burial ground in the 300 Area is beyond the scope of this SPD EIS. This comment has been forwarded to the Richland Operations Office.

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Although a partial failure of the Grand Coulee dam is discussed in Section 3.2, there is no discussion of any type of failure of the Priest Rapids Dam which is immediately upstream of Hanford. We recommend that a discussion of this failure, or whether its consequences are bounded by the Grand Coulee failure, be included in this document. 20

Section 3.2.1.2.1, General Site Description, Page 3-8, second paragraph, discusses peak and off-peak noise levels along the major automobile traffic routes near the Hanford site. The peak noise level is described as 62 dBA, and the off-peak at 70dBA - this would appear to be backwards. 21

The Regional Economic Area (REA) defined in Section 3.2.3, Socioeconomics, is too small. The presence of the Columbia River on the Hanford Site and the potential impacts of Hanford operations on the one million Oregonians who live downstream along this River make Hanford a unique case. The REA should be expanded to include those areas in Oregon along the Columbia River. 22

Section 3.2.7, Water Resources, does not discuss Hanford's vadose zone contamination problems. A discussion of these should be included in this section. 23

Figure 3-8 shows a "West Pond." Section 3.8.1.1 refers to a "West Lake." These names should be consistent. 24

Section 3.2.9, Cultural and Paleontological Resources, refers to the "Cultural Resources Management Plan," (Batelle 1989). This document was found unacceptable by the Yakama Nation and is currently being re-written. Any decisions made based on this document must be re-visited once the new document is complete. 25

Section 4.2.11.1 states that the cultural and paleontological aspects of continued storage of plutonium under the no-action alternative would be independent of the proposed action. This is logically inconsistent. This statement needs to be clarified. 26

Section 4.2.13.1 does not discuss the need for more and more extensive maintenance on facilities at Hanford as they age under the no-action alternative. We recommend that this aspect of the no-action alternative be evaluated and formally discussed in the EIS. 27

Section 4.3, Alternative 2, does not discuss the impact on Hanford's high level waste of using the High Level Waste Vitrification (HLWVF) Plant for part of the immobilization process. It would reasonably be expected to impact the processing schedule, which would leave wastes in the tanks longer and constitute an increased risk. We recommend that this aspect of Alternative 2 and all other alternatives that involve use of the HLWVF Plant be evaluated and discussed. 28

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MD170-20

Facility Accidents

The analysis that postulates a partial failure of the Grand Coulee Dam also assumes the failure of all subsequent downstream dams as a result of the influx of water caused by the postulated Grand Coulee failure. This bounds the hazard from a postulated failure of the Priest Rapids Dam alone. Details of the analysis can be found in the documents referenced in Section 3.2.7.

MD170-21

Air Quality and Noise

Section 3.2.1.2.1 was clarified to state that both the peak and offpeak equivalent sound levels (1 hr) from State Route 24 were 62 dBA, and both the peak and offpeak equivalent sound levels (1 hr) from State Route 240 were 70 dBA.

MD170-22

Socioeconomics

Hanford is located in the Richland/Kennewick/Pasco, Washington economic area, which was delineated by the DOC's Bureau of Economic Analysis. An economic area is defined by one or more economic nodes (metropolitan areas or similar areas that are centers of economic activity) and the surrounding counties that are economically related to the nodes. Commuting patterns play a major factor in defining the economic areas.

MD170-23

Water Resources

The vadose zone contamination largely occurs beneath the HLW tanks in the 200 Area. The construction and operation of the HLW Vitrification Facility are described in the *Tank Waste Remediation System, Hanford Site, Richland, Washington, Final Environmental Impact Statement* (DOE/EIS-0189, August 1996). Although the proposed immobilization approach would use the vitrification plant in the 200 Area, it is not expected to contribute to any vadose zone contamination.

MD170-24

Water Resources

Figure 3-8 was revised to read "West Lake."

MD170-25

Cultural and Palentological

DOE acknowledges the commentor's concerns regarding cultural resources management. The concerns of the Yakama Indian Nation over the effects of

any surplus plutonium disposition activities at Hanford would be taken into account during government-to-government consultation conducted by DOE with the tribe in accordance with Federal laws, treaties, and agreements. Cultural resources management activities related to the surplus plutonium disposition program conducted at the site would be performed in accordance with the most current Hanford Cultural Resources Management Plan. The Yakama Indian Nation was contacted by letter in October 1998 as shown in Appendix O. To date, a response has not been received.

MD170-26**Cultural and Paleontological**

Section 4.2.11 was revised to clarify that any impacts to cultural and paleontological resources from the continued storage mission under the No Action Alternative would be addressed through ongoing regulatory compliance procedures and consultations as described in the *Storage and Disposition PEIS*.

MD170-27**Infrastructure**

The planned completion date for the Hanford site cleanup is 2046 as described in *Accelerating Cleanup: Paths to Closure* (DOE/EM-0362, June 1998). Therefore, maintenance of the site infrastructure would be provided to support Hanford's cleanup mission during this period, regardless of decisions related to surplus plutonium disposition. Impacts associated with providing continued surveillance and maintenance are beyond the scope of this SPD EIS. Surplus plutonium disposition activities, including D&D, are expected to be completed by 2019, which is well before the site is expected to be cleaned up in 2046.

MD170-28**Immobilization**

The use of the HLW facility for canister filling would not be expected to seriously impact the schedule for processing Hanford tank wastes because the canisters with surplus plutonium would feed directly into the line and would make up a small percentage of the total number of HLW canisters that need to be vitrified.

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Tables 4-55 and 4-56 should be labeled to indicate which table presents Hanford data and which table is for Pantex.	29
The Hanford and Pantex statistics in Table 4-57 should be separated in the table for easier reference even though clarification is available in the paragraph following the table.	30
Noise impacts on wildlife are not consistently discussed from alternative to alternative. We recommend that discussions of these impacts be included in all alternatives.	31
The EIS assumes that the Waste Isolation Pilot Plant (WIPP) will be open on schedule. Recent events suggest that this might not be the case. We recommend that the impact of a 1-year delay in the opening of WIPP be evaluated and its impact on all the alternatives discussed.	32
The facility accidents sections of each alternative do not contain any discussion of possible synergistic effects of accidents in buildings where more than one processing function is in progress. For example, Alternative 6b: Pit Conversion and MOX co-located in the Fuels and Materials Examination Facility at Hanford. We recommend that this discussion be included in this section for all alternatives that involve co-located facilities.	33
Section 4.32 does not include the Groundwater/Vadose Zone/Columbia River integration project at Hanford as a reasonably foreseeable action. We recommend that this be included and evaluated.	34
Section J.1.1.5, Other Computational Assumptions, states that ground surfaces were assumed to have no previous deposition of radionuclides. This statement needs to be clarified for Hanford since there is a large amount of currently contaminated ground surface on the Hanford Site.	35
Table K-1 should include units for the values listed.	36
Section K.14.2, Modeling of Dispersion of Releases to the Environment, makes the statement that ingestion pathways have been studied and found not to contribute as significantly to dosage as inhalation. This is not necessarily true if you consider the Native American Subsistence Scenario. We recommend that this assumption be re-evaluated.	37

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Waste Management

The titles for Tables 4-46 and 4-47 already contain the name of the site for which the impact data are presented. Table 4-46 provides the potential waste management impacts of construction at Pantex; Table 4-47, the corresponding impacts at Hanford.

MD170-30

Socioeconomics

DOE acknowledges the commentor's request for clarification. The data for Hanford and Pantex in Table 4-48 are already separated. The "Pit Conversion" column contains the Pantex data; the "Immobilization" and "MOX" columns, the Hanford data. The title of Table 4-48 indicates that the data are for pit conversion at Pantex and immobilization and MOX at Hanford.

MD170-31

Ecological Resources

The Ecological Resources portions of Section 4.26 were revised to make the discussions of potential noise impacts on wildlife more consistent. The Air Quality and Noise sections in Chapter 4 of Volume I discuss the noise impacts for each of the candidate sites, which would bound the impacts for each of the alternatives at each particular site. No Federally listed threatened or endangered species or their critical habitats would be affected because, with the exception of SRS, none have been sighted on or near the proposed site locations. At SRS, the American alligator has been observed near F-Area, but its occurrence there is seen as uncommon. Noise impacts on ecological resources would be of short duration and would likely be minor for each alternative.

MD170-32

Waste Management

This SPD EIS did not assume that WIPP would open on schedule. However, WIPP began receiving shipments of TRU waste for permanent disposal on March 26, 1999. As described in Appendix F.8.1, and the Waste Management sections in Chapter 4 of Volume I, it is conservatively assumed that TRU waste would be stored at the candidate sites until 2016 at which time it would be shipped to WIPP in accordance with DOE's plans.

MD170-33**Facility Accidents**

Synergistic effects become significant when accidents at multiple facilities can affect the same receptor (person or location). For the proposed surplus plutonium disposition facilities, synergistic effects were taken into account for seismic events (i.e., design basis or beyond-design-basis earthquakes). The synergy here is due to the common cause initiator (i.e., seismic ground motion). This is accounted for by summing population doses and LCFs for these scenarios for facilities located at the same site. This analysis is presented in the Facility Accidents sections in Chapter 4 of Volume I. Doses for the MEI were not summed because an individual would only receive a summed dose if he or she were located along the line connecting the release points from two facilities and if the wind were blowing along the same line at the time of the accident. A brief discussion of synergistic effects was added to Appendix K.1.3.2.

MD170-34**Cumulative Impacts**

Section 4.32 was revised to include additional and updated reasonably foreseeable actions at each of the candidate sites, including Hanford. The Groundwater/Vadose Zone/Columbia River integration project is not expected to impact the cumulative impacts studied in this SPD EIS.

MD170-35**Human Health Risk**

The calculations were performed to assess the doses from operating the proposed surplus plutonium disposition facilities. The presence on the ground of previously deposited radionuclides does not affect the doses specifically associated with operating these facilities. Doses from existing ground contamination are included in the current Hanford site doses reported in Section 3.2.4. The total doses from existing contamination and from operating the proposed surplus plutonium disposition facilities are reflected in the cumulative doses given in Section 4.32. There would be no releases of radioactivity during the construction of the proposed surplus plutonium disposition facilities, and therefore no associated radiological impacts (e.g., see Section 4.3.1.4).

MD170–36

Facility Accidents

DOE appreciates the feedback on the SPD Draft EIS. Table K–1 was revised to include units for the values.

MD170–37

Facility Accidents

The Native American subsistence scenario represented exposures to a Native American who engaged in both traditional lifestyle activities (e.g., hunting, fishing, and using a sweat lodge) and contemporary lifestyle activities (e.g., irrigated farming). Exposure pathways included those defined for the residential farmer scenario plus additional pathways unique to the Native American subsistence lifestyle (such as sweat lodge use). The exposures were assumed to be continuous for 365 days per year over a 70-year lifetime. The scenario used native food ingestion rates. This scenario was developed for the *Tank Waste Remediation System Final Environmental Impact Statement* (DOE/EIS-0189, August 1996). It was found that by incorporating subsistence lifestyle activities and native food ingestion rates, this scenario resulted in exposures that would be approximately 5 times higher than the exposures for the residential farmer scenario. It must be realized, however, that this scenario was developed within the context of post-remediation risk (the risk resulting from residual contamination remaining on the site after remediation is completed) as opposed to the risk from accidents. The analysis of accidents in the above-referenced EIS was performed in a similar manner to that of this SPD EIS, restricting the dose pathway to inhalation and setting (dry) deposition velocities to zero. Also, the *Tank Waste Remediation System Final EIS* (DOE/EIS-0189, August 1996) was concerned with the radioactive contaminants in the waste tanks at Hanford, which contain primarily fission products. Many of these fission products are far more mobile through soil and water pathways than plutonium, the primary radiological hazard in this SPD EIS. Consequently, the current facility accident methodology is considered to be adequate in light of the Native American subsistence scenario and consistent with the assessment of consequences in the *Tank Waste Remediation System Final EIS* (DOE/EIS-0189, August 1996).

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MARY LOU BLAZEK
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Oregon Office of Energy Comments on the Surplus Plutonium Disposition Draft Environmental Impact Statement.
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Section K.14.2, Modeling of Dispersion of Releases to the Environment, states criticality doses are based on 1×10^{19} fissions. Most prior criticality accidents have been self-limiting for a variety of reasons, including boiling of water in solutions. It is not clear that the potential accidents for these facilities would be conservatively bounded by these assumptions. Therefore, we recommend that the basis for the number of fissions assumed in the criticality accidents be discussed.

38

The ground surface accelerations used in Section K.15.1, Beyond Design Basis Earthquake, are outdated. We recommend the most recent ground surface accelerations be used.

39

The adjustment of the damage ratio for plutonium in the vault from 0.5 to 0 on a beyond design basis earthquake (page K-15) is not realistic. Some of the plutonium containers will be damaged. We recommend that, to be conservative, the damage ratio be re-set to 0.5.

40

The following typographical or grammatical errors were discovered:

Summary, page S-22, "summarize" should be "summarizes."
 Section 2.1.3, page 2-8, second paragraph, first sentence – the words "a potential" appear to be extraneous.
 Section 3.2.8.2.2, page 3-36, third paragraph, last sentence – the verb should be "are" rather than "is."
 Section 3.2.9.3.1, page 3-39, first paragraph, second sentence – "Yakima" should be "Yakama."

41

MD170

MD170–38**Facility Accidents**

Appendix K.1.4.2 does not address the criticality source term, so it is assumed that the commentor is referring to Appendix K.1.5.1, where it is stated that the source term for the analyzed criticality is based on a fission yield from 1.0×10^{19} fissions in an oxide powder. This value is conservative compared with the guidance in *Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities* (DOE-HDBK-3010-94, October 1994), which specifies a reference yield level of 1.0×10^{18} fissions for fully moderated and reflected solids, and 1.0×10^{17} for dry powder and metal (Sections 6.3.2 and 6.3.3, respectively).

MD170–39**Facility Accidents**

Appendix K.1.5.1 was revised to delete the out-of-date ground acceleration data referred to by the commentor.

MD170–40**Facility Accidents**

The proposed surplus plutonium disposition facilities would be designed to Category 1 seismic criteria, meaning that a building collapse would be extremely unlikely. The assumption of vault survivability of the beyond-design-basis earthquake is based on the fact that the vaults would be designed with significantly more robustness than the balance of the proposed facilities. These requirements for the additional robustness derive from a desire for increased protection of the vault contents against physical catastrophes such as aircraft crash and against the threat of nuclear proliferation. Design features to address these concerns would increase vault survivability of a beyond-design-basis earthquake. Specifically, the vault would be expected to survive seismic events of sufficient magnitude to collapse the processing areas of the proposed facilities. The assumptions incorporated into this SPD EIS analyses are considered to be appropriate for assessment of environmental impacts and comparison of alternatives considered.

MD170–41**General SPD EIS and NEPA Process**

DOE appreciates the feedback on the SPD Draft EIS. The errors were corrected.

OREGON OFFICE OF ENERGY
MICHAEL GRAINEY
PAGE 1 OF 4



Oregon

John A. Kitzhaber, M.D., Governor

Department of Consumer and Business Services

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Testimony Before the
U.S. Department of Energy
on the Surplus Plutonium Draft Environmental Impact Statement

Michael Graine, Assistant Director
Oregon Office of Energy
August 18, 1998

Good afternoon. My name is Michael W. Graine. I am Assistant Director of the Oregon Office of Energy. I am here today on behalf of the State of Oregon. I will make a few remarks here today, and later we will submit more extensive written testimony on the Surplus Plutonium Draft Environmental Impact Statement.

We thank you for holding this hearing in Oregon and for the opportunity to express our concerns about the disposition of surplus plutonium. We recognize that the fate of surplus plutonium is an issue that transcends regional interests. The State of Oregon applauds the efforts to reduce nuclear weapons inventories worldwide and the related efforts to reduce the available stores of plutonium.

At the same time, we are especially concerned about any action at Hanford that would increase what is already a fundamental threat to the Columbia River — and a threat to the well-being of the millions of Oregonians who rely on the river. We remain opposed to any activities at Hanford that would detract from cleaning up what has been described as the most contaminated site in the Western Hemisphere. Because of this concern about Hanford cleanup, we support the draft statement in its selection of other sites as superior to Hanford for the fabrication of mixed oxide fuel.

We also support former Secretary Peña in his recent announcement that Hanford's mission should be exclusively focused on cleanup. For example, the use of the Hanford Fuels and Materials Examination Facility for weapons disassembly or fuel assembly would contaminate a clean facility at Hanford. We oppose the contamination of yet even more buildings at Hanford.

So do Oregon citizens. Three years ago, we held statewide public forums for more than 800 citizens to hear their opinions on plutonium disposition. Three messages clearly emerged from the forums: Cleanup must remain the only mission at Hanford. Vitrification is the least objectionable option for plutonium disposal. And Oregon must have a stronger voice on Hanford issues. In 1997, Oregon's Legislature mirrored this popular support for cleanup by passing a bill opposing any Hanford operations that would create more waste at the site and divert cleanup efforts.

ORD03

ORD03-1

Alternatives

DOE acknowledges the commentor's support of the surplus plutonium disposition program.

ORD03-2

Alternatives

DOE acknowledges the commentor's concern about potential contamination of the Columbia River. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

ORD03-3

Alternatives

DOE acknowledges the commentor's opposition to the use of FMEF at Hanford for surplus plutonium disposition activities.

ORD03-4

Alternatives

DOE acknowledges the commentor's support for the immobilization approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

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Grainey Testimony/p. 2
Aug. 18, 1998

We know that the scope of this hearing and the draft environmental impact statement does not include the issue of where mixed oxide fuel will be burned once it is fabricated. As we said earlier in this process, we continue to believe that vitrification is a faster and safer option than burning — and poses less risk to both people and the environment. Vitrifying could also be less costly than the burn option. We continue to urge the Department to seriously consider a 100 percent vitrification option for the surplus plutonium. 4

Thank you.

ORD03

69th OREGON LEGISLATIVE ASSEMBLY--1997 Regular Session

Enrolled
House Bill 3640

Sponsored by Representative SOWA; Representative ROBERTS, Senators DERFLER, TROW

CHAPTER 00617

AN ACT

Relating to nuclear facilities.

Be It Enacted by the People of the State of Oregon:

SECTION 1. The Legislative Assembly and the people of the State of Oregon find that:

(1) The maintenance of healthy, unpolluted river systems, airsheds and land are essential to the economic vitality and well-being of the citizens of the State of Oregon and the Pacific Northwest.

(2) Radioactive waste stored at the Hanford Nuclear Reservation is already leaking into and contaminating the water table and watershed of the Columbia River and radioactive materials and toxic compounds have been found in plants, animals and waters downstream from the Hanford Nuclear Reservation and constitute a present and potential threat to the health, safety and welfare of the people of the State of Oregon.

(3) The Hanford Nuclear Reservation is now one of the most radioactively contaminated sites in the world, according to government studies, and will require billions of dollars in costs for cleanup and the ongoing assessment of health effects.

(4) In November 1990, the people of the State of Oregon, by direct vote in a statewide election, enacted a moratorium on the construction of nuclear power plants, and no nuclear power plants are presently operating in the State of Oregon.

(5) In May 1987, the people of the State of Oregon, by direct vote in a statewide election, enacted Ballot Measure 1, opposing the disposal of highly radioactive spent fuel from commercial power plants at the Hanford Nuclear Reservation.

(6) In 1995, the Legislative Assembly resolved that Oregon should have all legal rights in matters affecting the Hanford Nuclear Reservation, including party status in the Hanford tri-party agreement that governs the cleanup of the reservation.

(7) Throughout the administrations of Presidents Ford, Carter, Reagan and Bush, the policy of the Federal Government banned the use of plutonium in commercial nuclear power plants due to the risk that the plutonium could be diverted to terrorists and to nations that have not renounced the use of nuclear weapons.

(8) The Federal Government has announced that it will process plutonium from weapons with uranium to produce mixed oxide fuel for commercial nuclear power plants and other nuclear facilities. The Hanford Nuclear Reservation, located on the Columbia River, is a primary candidate site being considered for the production facilities.

(9) The production of mixed oxide fuel will result in enormous new quantities of radioactive and chemical wastes that will present significant additional disposal problems and unknown costs.

OREGON OFFICE OF ENERGY
MICHAEL GRAINEY
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SECTION 2. The Legislative Assembly and the people of the State of Oregon:

(1) Declare that the State of Oregon is unalterably opposed to the use of the Hanford Nuclear Reservation for operations that create more contamination at the Hanford Nuclear Reservation, divert resources from cleanup at the Hanford Nuclear Reservation and make the Hanford Nuclear Reservation cleanup more difficult, such as the processing of plutonium to fuel nuclear power plants, reactors or any other facilities, and further declare that vitrification in a safe manner is the preferred means to dispose of excess plutonium, in order to protect human health and the environment.

(2) Request that the President of the United States and the Secretary of the Department of Energy continue their previous policy of banning the use of plutonium to fuel commercial power plants and nuclear facilities.

(3) Request that the Federal Government honor the Federal Government's original mandate to implement and complete the cleanup and restoration of the Hanford Nuclear Reservation.

SECTION 3. Not more than 10 days after the effective date of this Act, the Secretary of State shall transmit copies of sections 1 and 2 of this Act to the President of the United States, the Secretary of the Department of Energy, the Majority Leader of the United States Senate, the Speaker of the United States House of Representatives, each member of the Oregon Congressional Delegation, the Governors of the other 49 states and the tribal councils of the federally recognized Indian tribes in Oregon, Washington and Idaho.

Passed by House June 10, 1997

Ramona J. Kenady
Chief Clerk of House
L. Lundquist
Speaker of House

Received by Governor:

2:08 P. July 4, 1997

Approved:

3:29 P. July 25, 1997

John W. Egan
Governor

Passed by Senate June 19, 1997

Burt J. Schmeidler
President of Senate

Filed in Office of Secretary of State:

4:43 P. July 25, 1997

Pat H. H. H.
Secretary of State



United States
Department
of Energy

Comment Form

NAME: (Optional) GERRI PECK
ADDRESS: 2405 NE 46th Ave. Portland, OR 97213
TELEPHONE: 503) 288-2497
E-MAIL: gerri@ewropa.com
MOX SHOULD NOT BE ALLOWED ANYWHERE. MY
Grandson shooting an environmental film on the
Columbia says the River has orange sludge in it -
a "gift" of all the chemicals which abound. I work
with young children in the public schools. Wondrous
children who at the age of 5 & 6 can read & write &
spell & do numbers. ASTOUNDING - to me. But what kind
of world for these brainy geniuses? What of THEIR future?
Can we promise them a clean, safe, healthy environment?
WHY NOT? And what of all the healthy people who will
be rendered ill? All of us in good conscience must say
NO to these mad nuclear machinations. SO, I support ALL
the slogans: NO to nuclear proliferation! Clean up Hanford!
Save the beautiful Columbia - in Woody Guthrie's name!
NIX MOX. There are alternative forms of energy which are
acceptable and safe... and inexpensive. The future is in
your hands. If we don't survive, it will be on your conscience.
If you are still around. Think carefully. Think about the
people. Do not poison us - the atmosphere, the environment,
the water. Keep it ALL safe, healthy & clean. We are
DEPENDENT on you to take care of us. DO YOUR JOB
WELL. Be on the side of the people, not the corporations
SAVE THE EARTH. Look before you leap... & listen closely
& carefully to these voices of protest, voices who want a future.

ORD16

ORD16-1

MOX Approach

DOE acknowledges the commentor's opposition to the MOX approach. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program. To this end, surplus plutonium would be subject to stringent control, and the MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.



United States
Department
of Energy

Comment Form

NAME: (Optional) Don Peterson
ADDRESS: 1366 S.W. Taylors Ferry Ct. Portland, OR. 97219
TELEPHONE: (503) 244-3933

E-MAIL:

Relative to the proposed MOX program at Hanford, Wash. I reject this proposal and ~~as~~ demand that you do not pursue it any further. I am opposed to any increase in nuclear waste when in fact we (the US) have no safe place for storage because there is no place and can never be any safe storage of such deadly dangerous substance as radioactive waste. The shipment of waste produced by MOX is also highly objectionable, endangering communities and the environment wherever it may travel.

1

*NO! to MOX
NO! to nuclear energy
NO! to uranium extraction*

Sincerely, D. Peterson

MD247

MD247-1

Alternatives

DOE acknowledges the commentator's opposition to the MOX approach to surplus plutonium disposition, and in particular siting the MOX facility at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. To this end, surplus plutonium would be subject to stringent control, and the MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing. After irradiation, the MOX fuel would be removed from the reactor and managed with the rest of the spent fuel from the reactor, eventually being disposed of at a potential geologic repository built in accordance with the NHPA.

PUBLIC SAFETY RESOURCES AGENCY

W.P. MEAD

PAGE 1 of 15

**W. P. Mead, Director
Public Safety Resources Agency
P. O. Box 724
Portland, OR 97207-0724**

GENERAL NOTE

Much of the following information was presented on Tuesday, August 18, 1998 at a Public Meeting held in Portland, Oregon on the above-captioned subject. Additional comments, based on information received after that date, are also included to sustain questions that were raised at that Public Meeting.

Although these comments are being sent directly to the Department of Energy, other recipients are strongly encouraged to forward this information to other contacts to achieve the widest-possible distribution and to assist in developing additional lines of inquiry.

Much of this information was developed during and preparatory to a research tour of Canada and the mid-western United States during the period of June 23 through August 7, 1998. This research included reviewing available public printed and WWW documents; e-mail and telephone communications with persons employed by AECEB, AECL and Ontario Hydro; and a subsequent review of Ontario Hydro's engineering and design documents at their Bruce NPD facility.

Readers may contact PSRA at the above addresses regarding questions about this information or additional related data that has been referred to in this comment and which is undergoing review.

W. P. Mead, Director
Public Safety Resources Agency
Portland, Oregon
September 16, 1998

TO: United States Department of Energy
Office of Fissile Materials Disposition
c/o SPD EIS
P. O. Box 23786
Washington, D. C. 20026-3786

FROM: W. P. Mead, Director
Public Safety Resources Agency
P. O. Box 724
Portland, OR 97207-0724
E-mail: "bilim@band1.bandwidth.net"

DATE: September 16, 1998

RE: Public Comments - Surplus Plutonium Disposition;
Draft Environmental Impact Statement

MD236

Comment Documents and Responses—Oregon

PUBLIC SAFETY RESOURCES AGENCY

W.P. MEAD

PAGE 2 of 15

INTRODUCTORY COMMENTS

The disposal of Surplus Weapons Plutonium has been channeled into two primary processes: Immobilization, and MOX Fuel that would be "burned" in nuclear reactors. Most of the comments we've reviewed about the SPD DEIS appear to overwhelmingly favor immobilization (vitrification within high-level radioactive wastes from our nuclear defense legacy) over the MOX Fuel option.

While MOX Fuel is technically not a satisfactory answer for disposal of all Surplus Weapons Plutonium, Immobilization of the entire inventory of Surplus Weapons Plutonium is technically feasible and could be achieved much more rapidly and with less cost, fewer security risks, fewer adverse societal ramifications, and without creating additional waste streams to endanger the environment and public health and safety.

The use of MOX Fuel introduces many additional factors that may lessen the degree of control over the reactor's core. MOX Fuel requires higher operating core temperatures and pressures and significantly reduces the "margin of error" that is allowed when operating the reactor. Also, we have no true operational experience with these types of core loadings. Therefore, what we have based our "findings" on to date are, in reality, only conjecture about what we hope to achieve.

Regardless of the increasing body of research that now indicates that MOX Fuel is an expensive and risky alternative, the fact remains that it most likely will be used as a primary disposal option. Acting under that assumption, PSRA explored alternatives to existing LWRs (Light Water Reactors) in the United States.

Most of the persons and organizations who oppose the MOX Fuel option have concentrated on the safety issues that are associated with using MOX Fuel in Light Water Reactors such as those currently used to produce power in the United States, however it is important to also determine whether MOX Fuel can be safely used to run CANDU Reactors as was proposed as an alternative and/or supplemental platform.

PSRA has studied this issue and hopes to focus additional attention on this option and the safety, societal and security concerns that must be addressed before using MOX Fuel in CANDU power reactors currently operating in Ontario, Canada. To that end, we offer the following comments for the public record.

SPECIFIC COMMENTS

The National Academy of Sciences' 1995 Report ["Management and Disposition of Excess Weapons Plutonium Reactor-Related Options for the Disposition of Excess Weapons Plutonium, Committee on International Security and Arms Control, National Academy Press, Washington, D.C., 1995] raised questions about the CANDU Reactor's role in the disposition of Surplus Weapons Plutonium by using it as MOX Fuel in existing Canadian reactors.

NAS reported that the information cited in their Report had been submitted by AECL too late to undergo Peer Review of AECL's claims of CANDU's suitability and safety when using MOX Fuel.

It is important that we realize that the selection of MOX Fuel as a disposal option vastly changes the dimensions of the joint agreement between Russia and the United States. The inclusion of the MOX Fuel option has opened-up new industrial and marketing channels throughout the world, including Great Britain, Europe and Japan.

MD236

MD236-1

Alternatives

DOE acknowledges the commentor's concern about the use of MOX fuel in domestic, commercial reactors. The fabrication of MOX fuel and its use in commercial reactors have been accomplished in Western Europe, and electricity was generated from MOX fuel on a demonstration basis in the United States in the early 1970s. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.

Potential waste management impacts of the proposed surplus plutonium disposition program are analyzed in this SPD EIS for each candidate site, and a detailed analysis is provided in Appendix H. As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel management at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies. Likewise, the additional spent fuel would be a very small fraction of the total that would be managed at the potential geologic repository.

Decisions on the surplus plutonium disposition program will be based on national policy and nonproliferation considerations, environmental analyses, technical and cost reports, and public input.

MD236-2

MOX Approach

Only a partial, not full, MOX fuel core would be used in the selected reactors, which would require only slight modifications to reactor operations. Core load and safety analyses would be performed, and an NRC license amendment approved, prior to MOX fuel being introduced into any reactor. Operations and maintenance procedures would be revised as necessary to accommodate the use of MOX fuel. Section 4.28 was revised to provide reactor-specific analyses and discuss the potential impacts of using a partial MOX core during routine operations and reactor accidents.

Disposition of surplus plutonium will cost money, regardless of the method used. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract.

MD236-3

Parallex EA

In the SPD Draft EIS, DOE retained the option to use some of the surplus plutonium as MOX fuel in CANDU reactors, which would have only been undertaken in the event that a multilateral agreement were negotiated among Russia, Canada, and the United States. Since the Draft was issued, DOE determined that adequate reactor capacity is available in the United States to disposition the portion of the U.S. surplus plutonium that is suitable for MOX fuel and, therefore, while still reserving the CANDU option, DOE is no longer actively pursuing it. However, DOE, in cooperation with Canada and Russia, proposes to participate in a test and demonstration program using U.S. and Russian MOX fuel in a Canadian test reactor. A separate environmental review, the *Environmental Assessment for the Parallex Project Fuel Manufacture and Shipment* (DOE/EA-1216, January 1999), analyzes the fabrication and proposed shipment of MOX fuel rods for research and

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W.P. MEAD
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Instead of limiting the proliferation of Plutonium, these countries will be the controlling interests in spreading a Plutonium-based economic infrastructure in areas that do not currently have readily-accessible Plutonium.

4

Much of PSRA's recent e-mail has been forwarded on behalf of persons who live in the State of Michigan and the adjacent areas of the Province of Ontario, Canada, that will be the site of MOX Fuel transportation, testing and disposal once the MOX Fuel has been irradiated in CANDU reactor(s) at the Bruce Nuclear Power Development facility near Tiverton, Ontario.

In an effort to better understand these issues, I visited these areas in July 1998. Although the findings stated below are only preliminary as of this date, the on-going review process has shown no valid reason why they should not be included in our comments.

First, it should be clearly understood that the inclusion of the CANDU Reactor as a MOX Fueled disposal option adds another three separate entities to the current equation that already includes the Russians, the United States, potential infrastructure contractors in Europe and the United States, and the owner/operators of civilian power reactor utilities. These three entities are:

3

1. **AECB (Atomic Energy Control Board)** - The Canadian Government's equivalent to the Nuclear Regulatory Commission here in the United States.

2. **AECL (Atomic Energy of Canada, Limited)** - The design, construction and marketing arm that is heavily involved in Russian plutonium operational planning; and

3. **Ontario Hydro** - The reactor operators in Ontario;

Now that we've identified the Canadian entities, it's time to see how this puzzle fits together, why it soon becomes controversial, and to bring to light some of the misunderstandings and/or inconsistencies that have been presented by these three parties.

1. AECB:

PSRA contacted AECB in May 1998 to determine its role in the MOX Fuel project. AECB stated that its sole role would be to ensure the safety of the fuel and reactors, and that it would establish rules to ensure compliance. AECB had already posted information on its Website that related to the requirement of safe and secure transportation and storage of MOX Fuel.

It is interesting to note that recent statements in the Canadian Press attributed to AECL contradict this information about secure transportation while in Ontario. The U. S. Department of Energy has stated that MOX Fuel shipments would comply with SST-2 [Safe Secure Transport - 2] levels to ensure security while in the United States.

5

This would include armed escorts to counter any attempted hijacking of MOX Fuel. While Canada's AECB had stated it would comply with this standard, AECL has made statements that contradict AECB's. Has AECL superseded AECB's role in safeguarding plutonium?

MD236

development activities involving the use of limited amounts of U.S. MOX fuel in a Canadian test reactor. A FONSI was signed on August 13, 1999. Both of these documents can be viewed on the MD Web site at <http://www.doe-md.com>. If a decision is made to dispose of Russian surplus plutonium in Canadian CANDU reactors in order to augment Russian's disposition capability, shipments of the Russian MOX fuel would take place directly between Russia and Canada. Activities in Canada would be conducted in accordance with applicable Canadian laws and regulations and would be regulated by the appropriate government authorities.

MD236-4

Nonproliferation

DOE believes the MOX approach to surplus plutonium disposition would help implement rather than change the commitments between Russia and the United States. In late July 1998, Vice President Gore and Russian Prime Minister Sergei Kiriyenko signed a 5-year agreement to provide the scientific and technical basis for decisions concerning how surplus plutonium will be managed. This agreement enables the two countries to explore mutually acceptable strategies for safeguarding and dispositioning surplus plutonium. During the first week of September 1998, Presidents Clinton and Yeltsin held a Moscow summit and signed a statement of principles with the intention of removing approximately 50 t (55 tons) of plutonium from each country's stockpile.

The remainder of this comment is addressed in response MD236-1.

MD236-5

Parallex EA

DOE is no longer actively pursuing the CANDU option as discussed in response MD236-3.

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The following is an excerpt from Tom Spears' article in the Ottawa Citizen [Page A1-A2, Sunday 30 August 1998: "AECL's Cold War cargo - Plutonium from nuclear warheads to pass through Ottawa Valley to Chalk River."].

According to that report, AECL's spokesman, Larry Shewchuk, stated that high security won't be needed for the imported weapons material. *"There's no police escorts or anything like that."*

(AECL has consulted the Ontario Provincial Police about the shipment, but the OPP said it sees no security problems and won't be involved in the shipment.)

The exact timing of the test shipment is secret. While it may be possible to conceal the transportation from Los Alamos, New Mexico, to Chalk River, Ontario, of the initial test MOX Fuel, it is extremely doubtful that SST-2 shipments to the U.S./Canadian border could be concealed from the public.

The initial test will consist of MOX Fuel that contains approximately 600 grams (1.3 pounds) of Surplus Weapons Plutonium in the fuel assemblies; a full core loading in an average CANDU Reactor at the Bruce NPD facility uses nearly 3,185,600 pounds of natural Uranium Dioxide.

There are three possible routes from Los Alamos to Chalk River:

One would cross the border at Sarnia and come east along Highway 401, turning north at Belleville toward Pembroke.

Another would come through Watertown, New York, cross the St. Lawrence River at the Ivy Lea Bridge, then turn east to Brockville and north through Smiths Falls, Carleton Place, Almonte and Arnprior on the way to Chalk River.

The third would cross into Canada in Manitoba and travel north of Lake Superior on the Trans-Canada Highway.

Having recently driven many of these routes in both an RV and small car, I can make several observations with certainty based on my personal experiences in Canada and the midwestern United States:

1. Canada's roadways are not up to the safety and design standards that Americans take for granted: There were literally miles of vehicles following each other at high speed and close intervals through winding hills without passing lanes or even a place to pull off the highway. Highways are being upgraded, but some areas are still without travel services.

2. There are environmental and ecological considerations that Americans don't even contemplate: Traffic along the Trans-Canada Highway frequently stops during night time hours due to the danger of hitting a moose.

3. Incidents of "Road Rage" have become so frequent in Ontario that new - mandatory - programs have been linked to traffic enforcement efforts along many of the routes identified for MOX Fuel shipments.

Even though it's AECL policy not to say publicly which route it will use, or when the shipment will come through, it is important that local emergency planners along the route be notified. Municipal officials in Lanark County, Smiths Falls and Carleton Place -- all on one of the possible shipping routes -- said they didn't know about the shipment.

While this secrecy may hold true for the initial test run, PSRA seriously doubts that the increased security necessary for large MOX Fuel shipments will remain unnoticed by citizens who live in farming and natural resources areas along these routes.

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2. AECL:

Robert Gadsby is the Program Director of AECL's MOX Fuel project. As such, he and his team have visited sites in the United States and Russia in an effort to facilitate using AECL's CANDU Reactors to dispose of Surplus Weapons Plutonium.

Mr. Gadsby and I began our communication via e-mail on June 16, 1998 and continued our communication via e-mail and telephone calls. At first, Mr. Gadsby's primary object appeared to be to determine why PSRA was interested in AECL's CANDU design and who would receive our report.

Although I had requested only general information in my first e-mail to Mr. Gadsby's office, I had to follow-up that request with specific quotes from the NAS Report to convince Mr. Gadsby that I had read the report and was following up on the NAS Report's findings. These specific quotations from the NAS questions are included below for reference:

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[FROM 06/17/1998 E-MAIL: PSRA to AECL]

Wednesday; 17 June 1998
Robert,

Yes, I've already made arrangements with Ontario Hydro for my visit at Bruce NPD, but I was hoping that I would be able to get some general information about the CANDU design before I visited their facility.

I've been dealing with Catherine Williams at Bruce, and she sent me some very general information. I then contacted AECB who referred me to AECL as the manufacturer of the CANDU reactor.

I believe my visit to Bruce would be more productive if I had a better understanding of the points listed below. This would allow me to focus on site specific training and operational history during my visit at Bruce.

To that end, I still would like to visit AECL's offices to get a better understanding of the CANDU reactor: Is there anyone else in the office who could discuss the CANDU's "non-MOX" operation as it is currently fueled at Bruce? It seems that since 20 CANDUs are operating in Ontario - and that the AECB referred me to your offices - that I should be able to get general (non-MOX) information about the reactor's design and operational safety features from someone in Mississauga.

I'm sorry that it seems that we won't be able to meet on July 16th. As the Director of AECL's MOX Project, talking with you would have been the most productive way to approach this. Perhaps you could put together an "Information Kit" on the MOX Project for me to pick up while I'm in that area. I would then be able to review that information before I visit the Bruce facility, and I would be able to follow up on this area of research when I return to Portland.

In reviewing the National Academy of Sciences' documents on using the CANDU reactors at Bruce, they were very clear that the information stated in those documents: "The panel notes that for this option virtually all of the information made available to the panel was provided by the vendor, and had not yet been reviewed by DOE or other organizations." [page 144]

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The report then presents several pages of discussions on the advantages and/or disadvantages of using the CANDUs in that role. On page 151, the report included footnote 22:

"The panel was informed by representatives of the vendor that this figure was arrived at not by analysis designed to estimate the maximum plutonium loading that could be safely accommodated in CANDU reactors, but rather because this was the loading required to meet DOE's specified goal of consuming 100 tons of WPU (the potential combined excess stocks of the United States and Russia) in 25 years of operation, given the estimated capacity of the FMEF fabrication facility (Feinroth 1994). Additional studies should be pursued to determine the maximum safe plutonium loading; higher plutonium loadings would increase the rate of plutonium disposition and reduce the number of fuel bundles that would have to be fabricated, potentially lowering costs."

The report continues along several other threads, however the main reason for our interest here in the Northwestern United States is that the FMEF, cited above, is located at Hanford, and AECL apparently wants to use this facility. On page 152, the report cites "Fuel Fabrication: Like the United States, Canada has no MOX fuel fabrication capacity. Fabricating MOX fuel for CANDUs at the Hanford FMEF facility would be the most expeditious approach, with the same caveats as is the LWR case. The vendor has in fact examined fabrication of MOX fuel in the FMEF in considerable detail, and believes that large throughputs of CANDU MOX fuel (over 160 MTHM/yr) are possible, by taking advantage of additional floor space not used by the current MOX fabrication line in the facility (AECL 1994)."

Since much of the report on the CANDU option was based solely on AECL's preliminary information that had not been reviewed by USDOE or other agencies, we're interested in reviewing the updated findings. Although the majority of the workforce in the communities surrounding Hanford's FMEF is understandably in favor of pursuing the MOX option, it appears that the majority of the populations in the states surrounding that area have questions about the advisability of increasing FMEF production at a time when they had been informed by USDOE that FMEF's mission would be ending.

If I can report that AECL's latest research indicates that the CANDU reactor can use a higher level of MOX fuel than was stated in the NAS report, then it could be assumed that FMEF operations could be shortened by several years. If we can pass the questions of how to contain potential FMEF site contamination and transportation - security issues there appears to be a better probability for agreement about using FMEF in that new role.

I believe that most persons, regardless of how they feel on the use of MOX fuel, agree that MOX-fueled reactors will be a part of our future. The President has declared this will be done, the industry is widely in favor of it, and most persons don't want to waste a "product" that they already have paid for and can provide future energy needs.

While the general public in the Northwestern United States may not be in favor of using FMEF for a 25 year program for LWRs in the U.S., they may well reverse that opposition if they understand that the plutonium was being sent out of the country for use in a "safe" reactor.

Based on my preliminary understanding of the CANDU design that would be used at Bruce to contribute to this project, CANDU appears to be a logical choice for the disposition for WPU, however I still cannot give a final recommendation to our states until we have information that is more recent than the NAS report that is commonly cited in this discussion.

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I also have reviewed AECL's 1997 summary regarding the use of MOX fuel in CANDU reactors and the associated issues. I think you'll agree that the project is feasible from a purely engineering standpoint, and that the CANDU would be a better platform than would a LWR. These factors appear to be strongly in favor of the CANDU, and I'd like to update the information we currently have.

As to my original request, I would appreciate any information you could provide on the following topics:

1. A general overview of the CANDU 's safety and control features as it is _currently_ operating (non-MOX mode);
2. Discuss how a MOX-fuel core loading would modify those operating characteristics; and,
3. Better understand what design modifications might be required to accommodate the use of MOX fuel.

I will be in Mississauga on 16 July 1998 and would like to visit AECL's offices to talk with someone on the general characteristics of a CANDU reactor operating in a "standard" (non-MOX) mode. I also would appreciate any information you are able to provide to update the NAS's 1995 report. I realize that you will not be personally available to meet with me on July 16th, however I sincerely hope that someone can provide me with the above information so I have a better understanding of the CANDU platform before I visit the Bruce NPD on the following day.

Thanks for your assistance in this matter. I will be leaving on a family vacation and research trip next week, so I'd greatly appreciate any help you can provide via e-mail or telephone. As far as receiving printed information, I'd like to have the opportunity to review it before visiting the Bruce facility, so I would want to personally collect that on July 18th when I'll be in Mississauga for other meetings.

PSRA's report is due in mid-August, and I hope to be able to report that AECL has provided us with the information our states need to make an informed decision about the use of specific facilities at the Hanford Reservation.

I hope to meet one of your co-workers on July 17th.

Sincerely,

W. P. (Bill) Mead, Director
 Public Safety Resources Agency
 P. O. Box 724
 Portland, OR 97207-0724

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Following these specific questions, Mr. Gadsby stated that the U.S. Department of Energy had funded at least one additional (subsequent) study that showed that MOx Fuel was suitable for use in AECL's CANDU Reactors. When I requested a copy of that study's findings, Mr. Gadsby stated that it was "AECL's proprietary information" and that it was not to be released.

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MD236-6

Parallex EA

This comment is addressed in responses MD236-3 and MD236-5.

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Instead, Mr. Gadsby sent me a copy of a general talk he had presented to a Japanese pro-MOX forum. Mr. Gadsby's latest information was non-technical and did not answer many of the specific questions I had asked, so I clearly restated my request for information:

[FROM 06/17/1998 E-MAIL: PSRA to AECL]

Wednesday: 17 June 1998
Robert,

Thanks for your reply to this morning's e-mail. I have reviewed the file you attached, and it appears that the CANDU reactor would be a better platform for this project than would a LWR of the type we commonly use in the United States. ...

Based on your presentation, it initially appears that a CANDU program would have several benefits over a siting within the United States. Primary among these are (1) the WPU would truly be able to achieve the Spent Fuel Standard, (2) the length of time for the reduction program could be shortened if the CANDUs were allowed to operate as you described in your report, (3) the CANDU's design would not require making physical changes to its core, (4) AECB already has stated that it would provide a level of physical security equivalent to USDOE's to safeguard the fuel while within Canada, and (5) that the spent fuel would remain in Canada instead of being returned to the United States.

These are all points that the average citizen would likely accept, however most of the information we've received to date was not clear on those points. Given that, you can understand why many of them have had reservations about the MOX program.

This is only my personal opinion, but based on several years of work in both the business and the area, I still believe additional information would be needed to allay the doubts of several persuasive organizations who have political weight in the decision-making process: The fact is that the President made a decision to pursue a dual-track disposal option and it will happen; the reality is that solid technical arguments must be presented to overcome political opposition that may be based on what appears to be faulty information that we have received to date. ...

You asked about our clients: They are several voting members - a majority - of an official interstate waste board and several adjunct agencies who are working on site remediation issues at the Hanford Reservation. ...

This has led me to perceive that the opinion of a majority of the citizens in the Northwestern United States is opposed to a MOX-fuel option; particularly if Hanford's FMEF and/or FFTF facilities are involved in that process. USDOE has just announced that public hearings and comments will be accepted on these proposals until approximately mid-August. PSRA has been asked to have our report ready in time to allow the clients to review those findings, and with sufficient time for them to then submit comments prior to that deadline.

I had been aware of several other studies similar to the ones you've mentioned, however most of the published studies deal with LWRs, not CANDUs. Is there any non-proprietary information you could allow me to review? Also, is there anyone whom I could contact about the general non-MOX operations of a CANDU reactor?

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AECL has been identified as the manufacturer of the CANDU reactor, yet the general public really doesn't know much about how it operates. I'm not asking to be allowed to rummage through AECL's corporate secrets; only that I be allowed to get general (non-MOX) information about the reactor's design and operational safety features from someone in Mississauga.

To repeat what I've requested in my previous e-mails: I still would like to visit AECL's offices to get a better understanding of the CANDU reactor. Is there anyone in the office who could discuss the CANDU's "non-MOX" operation as it is currently fueled at Bruce? It seems that since 20 CANDUs are operating in Ontario - and that the AECB referred me to your offices - that this is a reasonable question.

Our concern here in the Northwestern United States is based on the potential long-term role as a MOX-fuel fabricator, with the possible (and currently, proven) diversion of funding by USDOE from the remediation of contaminated sites at the Hanford Reservation.

To this end, Hanford's FMEF directly enters into the equation: MOX will be a fact of life, therefore Hanford will play a central role in achieving those goals. If CANDU can speed up that process while reducing the time needed, then the cleanup of existing sites could be accomplished sooner than if LWRs in the United States were used to achieve those goals.

My gut feeling is that our clients - and the majority of the persons in the Northwestern United States who are not associated with the Tri-Cities workforce - will accept virtually any solution that will result in a reduction of the contamination at Hanford while concurrently relieving them of the potential creation of more irradiated spent fuel. Thus, if CANDUs can do this work and Canada is willing to retain possession of the spent fuel, then that is a major "selling" point that should be included in our report.

As I stated to you in my previous message: While the general public in the Northwestern United States may not be in favor of using FMEF for a 25 year program for LWRs in the U.S., they may well reverse that opposition if they understand that the plutonium was being sent out of the country for use in a "safe" reactor.

As to my original request, it appears that we've been successful in answering most of my questions, however I would appreciate any information you could provide on the following two remaining points:

1. A general overview of the CANDU 's safety and control features as it is _currently_ operating (non-MOX mode); and,
2. Discuss how a MOX-fuel core loading would modify those operating characteristics.

I will be in Mississauga on 16 July 1998 and would like to visit AECL's offices to talk with someone on the general characteristics of a CANDU reactor operating in a "standard" (non-MOX) mode. I believe I now have a better understanding of the design characteristics of the platform, but I would like to understand the actual operational and safety differences between CANDUs and the LWRs with which I am more familiar.

Thanks, again, for your assistance in this matter. You've taken a lot of time to respond to my questions, and I very much appreciate the supplemental information you've provided. If you have any information of a "general" (non-MOX-fueled core) nature for CANDU reactors, I really would like to be able to review that material before visiting the Bruce NPD facility.

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I will be leaving Portland early next week, and probably would not receive that information before I leave. However, as I will be staying in the Mississauga - Port Credit area during early July, it would be easier for me to collect any written information during that time period.

To summarize what I said earlier today: PSRA's report is due in mid-August, and I hope to be able to report that AECL has provided us with the information our states need to make an informed decision about the use of specific facilities at the Hanford Reservation.

I hope to meet one of your co-workers or at least be able to pick up the requested AECL information on July 17th.

Sincerely,

W. P. (Bill) Mead, Director
Public Safety Resources Agency
P. O. Box 724
Portland, OR 97207-0724

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Mr. Gadsby returned my telephone call and we spoke on these topics for approximately twenty-five minutes. He stated that although he and his team would be in Russia during the time of my visit (I was staying just a few miles away from AECL's office complex in Mississauga, Ontario), that he would arrange for someone to talk with me and would prepare an information package for me to receive during my visit on July 16, 1998.

On the morning of July 16th I telephoned Mr. Gadsby's office at AECL's office complex and was advised (1) that they had no package waiting for me; (2) that no one had been scheduled to discuss the questions Mr. Gadsby had agreed to respond to; and (3) that although Mr. Gadsby had gone to Russia, that no one had been designated to act on Mr. Gadsby's behalf during his absence.

In the end, it appears that although Mr. Gadsby stated that AECL had new findings that supported the ability of CANDU Reactors to safely operate on MOX fuel, the facts are that he admitted that this fuel had not been used in CANDU Reactors of that design, and he was not able to produce the documentation to substantiate his claims on behalf of AECL's unsupported statements in the 1995 NAS Report.

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3. Ontario Hydro:

Although it is not intentionally deceptive, the name "Ontario Hydro" is somewhat misleading when first viewed by citizens of the United States.

Most persons who live in the Northwestern United States associate the word "Hydro" as referring to a dam that produces electricity. In fact, when I first began making reservations for the Canadian portion of this summer's research trip, I thought the managers of the RV parks were asking if we wanted to connect to a water faucet.

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"Hydro" is the Canadian term for "electrical power." While this may have been accurate fifty years ago, the underlying source of that electricity has changed from "hydro" to "nuclear": Ontario Hydro now produces about 60% of its electricity in twenty CANDU Reactors. Of these, eight are sited at the Bruce Nuclear Power Development ("Bruce NPD") facility. Of those eight, four have been identified by the U. S. DOE as being considered for using MOx Fuel from the joint U.S.-Russian agreement to dispose of Surplus Weapons Plutonium.

In reviewing Ontario Hydro's operations and safety history before visiting their facility, I discovered (1) that Ontario Hydro had received several warnings from AECB about safety conditions at their nuclear facilities; and (2) their senior management had been reorganized due to the "fallout" from those critical reviews.

I later learned that in an effort to set a record for operating one of the CANDU Reactors at the Bruce NPD, that senior management had decided to intentionally by-pass taking the reactor off-line for scheduled maintenance. This decision resulted in excessive wear on the reactor's physical plant and kept the reactor shut down and off-line for an extended period of time. As I stated in my oral comments at Portland's Public Meeting in August, this is not the type of behavior that should be attempted with this technology.

As part of our research, PSRA was authorized to review technical documents for the eight CANDU Reactors at Ontario Hydro's Bruce NPD. The four reactors in Unit A differed from the four reactors in Unit B in several important design and safety aspects.

At the time of our pre-tour and on-site research the only CANDU Reactors that had been identified for the MOx Fuel role at Bruce NPD were the newer models of Unit B. These four reactors have a total net rating of 3,440MW(e) and produced their first electricity during the years of 1984-1987. However, in late August we received reports from Canadian sources that the older reactors of Unit A were the CANDUs under consideration for this project.

Unit A's four reactors have a total net rating of 3,076MW(e) and produced their first electricity during the years of 1976-1978. This requires clarification and, if true, a re-evaluation of those reactors on the basis of their design, safety and longevity.

The U.S. Department of Energy should clearly identify the specific reactors that are currently being considered for the MOx Fuel disposal option. If reactors in foreign nations are being considered, the Department should also clearly identify those specific reactors and verify that list with the governing agencies of those nations.

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ADDITIONAL CONCERNS

1. Access to all USDOE/AECL CANDU Studies:

According to Mr. Gadsby, AECL's MOx Project Director, the United States Department of Energy funded the subsequent AECL study that he alleges proved the CANDU Reactor was a satisfactory platform for the MOx Fuel disposal option. Mr. Gadsby also stated that this information was proprietary and was not to be released.

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PSRA questions why - if this was a true statement - the citizens of the United States funded what can essentially be considered an R&D project for a foreign corporation but cannot review the results of those studies.

The U. S. Department of Energy should release the entire text of these reports, including their references and attachments, for review by the general public and peer review of technical findings that would enable replication of those findings by independent researchers.

2. Disposition of Spent MOX Fuel used in CANDU Reactors:

PSRA was informed that spent MOX Fuel from the initial test at Chalk River, Ontario would remain in Canada for disposal in a geologic repository. As yet, no such repository exists for Canadian spent fuel. If MOX Fuel is to be used in Canada's CANDU Reactors, then it also should remain in Canada after irradiation.

Canada's two major players in the MOX Fuel disposal option are AECL and Ontario Hydro. During our research, both parties stated their contributions were beneficial to world peace by helping to eliminate the available supply of Weapons Plutonium. Their altruism should be ensured by a binding agreement stipulating that once the MOX Fuel leaves the United States that it will never return to our country.

Mr. Gadsby stated that the Russians trusted Canada to ensure that Weapons Plutonium used in the MOX Project would not find its way back into nuclear weapons. It logically seems that the only way this could be achieved would be to have the final repository for all spent MOX Fuel to be sited within Canada and be monitored by other neutral countries and organizations such as the IAEA.

If Canada is serious about wanting to "help" ensure the goals of removing this material from circulation, then it should also accept it as the end-user and be willing to co-exist with MOX Fuel from the time it enters the border into Canada as un-irradiated plutonium, and it should safeguard the irradiated spent fuel at a level equivalent to those required by the U. S. Department of Energy.

The U. S. Department of Energy should require that Canada assume perpetual control of MOX Fuel at the time that fuel enters Canada, and that Canada's safeguards be equivalent to those established by USDOE for transportation and storage within the United States. Furthermore, USDOE should not be permitted to accept spent MOX Fuel from any other country, including Russia or other participants in present or future agreements to dispose of Weapons Plutonium of non-U. S. origin.

3. Clarification/Identification of Reactors proposed for using MOX Fuel:

PSRA has recently received reports that several owners and/or operators of reactors under consideration for the MOX Fuel disposal option have withdrawn from participation. In many instances, other owner/operators have been substituted to replace the original owners, but those operators have stated that they did so only to allow one or more of the consortiums to remain in the selection process.

If the withdrawal of a component disqualifies a consortium from the selection process, then it also indicates that the owners of that component realized that their participation in the MOX Fuel program was ill-advised.

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MD236-7

Parallex EA

Spent fuel generated by the Parallex Project would be managed in Canada by the Canadian spent fuel program. The remainder of this comment is addressed in response MD236-3.

MD236-8

MOX RFP

DOE acknowledges the commentor's concern about the procurement process. It is common business practice for potential bidders to pursue expressions of interest among qualified potential teaming partners, and as part of that process, determine which are in fact qualified to bid on the scope of work before settling on a team. It is not unusual, especially in large procurements, for teams to undergo several iterations before they are finalized. DOE will not speculate as to the intentions of any members of any responding teams, or others that may have decided in the end not to respond to the RFP. However, DOE agrees that a contract should only be awarded to a team meeting substantially all the requirements of the solicitation. DOE awarded the contract for the MOX fuel fabrication and irradiation services to a consortium that met all required elements.

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By allowing "front" reactors to join a consortium merely to include their name on a form so another reactor owner can later join the consortium violates the intention of the process. This demonstrates a lack of good faith by the parties of those consortiums and also on the U. S. Department of Energy for allowing this farce to continue.

PSRA calls on the U. S. Department of Energy to disqualify any consortium that does not include all components that were originally specified by USDOE for participation in that selection process.

4. Safeguards, Security, Operational, Environmental, Health and Safety Concerns that require further in-depth evaluation.

It appears that the United States Government still believes that the only time radiation crosses international boundaries is when a reactor is accidentally destroyed at Chernobyl. This phenomenon was repeatedly brought to our attention not only throughout our studies in the United States, but also by environmental remediation agencies during our 1998 research tour in Canada.

While the world-wide radiologic contamination from that incident received global attention and was thoroughly documented by the United States, it is ironic that fallout from nuclear weapons tests originating in the United States - that were monitored throughout the U. S. and showed unusually high radiation levels that extended right to our border with Canada - abruptly ended as the radiation plumes entered Canada.

The U. S. Department of Energy should require all Canadian parties to the MOx Fuel disposal option to comply with USDOE's standards of Safeguards, Security, Operational, Environmental, Health and Safety protection, and it should additionally conduct an on-going monitoring program of all aspects of foreign participation.

All reports, including radiologic monitoring of foreign facilities and transportation routes should be made available to the public via USDOE's WWW site. In cases where foreign regulatory agencies such as Canada's AECB have initiated action against a participant (such as Ontario Hydro), USDOE should retain the right to immediately halt further participation by those parties until the issues have been satisfactorily resolved.

5. Paying the financial costs of the MOx Fuel disposal program.

During my discussions with AECL's Mr. Gadsby, he stated that AECL would require funding by the United States to proceed with further implementation of the MOx Fuel program.

Also implied, but not specifically stated, was the indication that the U. S. would have to provide a MOx Fuel fabrication facility because no such facility exists in Canada. Russia also has no facilities to produce MOx Fuel, and has stated that it will require several billion dollars of assistance to move forward with its plans to use MOx Fuel in its reactors.

PSRA opposes any contribution of United States' funding to further a MOx Fuel disposal option. We believe better disposal alternatives exist, and that construction of a MOx Fuel fabrication facility would contribute to a dangerous proliferation of MOx Fuel use.

MD236

MD236-9

MOX Approach

Plutonium is regarded by most countries except the United States as a valuable resource. U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel. Irrespective of this, the United States will maintain its existing commitments regarding the use of plutonium in civilian nuclear programs in Western Europe and Japan. Russia may choose to reprocess its spent fuel and reuse the plutonium. It will be the responsibility of IAEA to monitor this activity and ensure that the material remains committed to civilian use.

The remainder of this comment is addressed in responses MD236-1 and MD236-3.

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If Canada wants to use MOX Fuel in its CANDU Reactors as a part of this program, it should finance that construction and infrastructure entirely as a sovereign (internal) national undertaking.

Also, the United States should not assist Russia in converting to a MOX Fuel option. If Russia is determined that the use of MOX Fuel is in its best national interest, then it has the responsibility to pay for those programs.

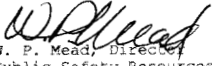
The U.S. and Russian disposal options do not truly require direct linkage. Russia views Plutonium as a national asset; PSRA views Plutonium as a worldwide threat and cannot support its use per the current proposals.

The United States should not contribute to additional proliferation in any manner.

CONCLUSION

The Public Safety Resources Agency recommends against the use of Surplus Weapons Plutonium in Mixed Oxide Fuel. PSRA strongly urges that Surplus Weapons Plutonium of all origins/nations be disposed of by other alternative technologies such as vitrification within mixed "High-Level" wastes, and that the disposal process not be linked to the demands made by the Russian government.

The United States is a sovereign nation that still maintains a significant nuclear and conventional advantage over potential non-terrorist threats, and can readily afford to unilaterally dispose of its Surplus Weapons Plutonium without linkage to another nations' programs.


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SUPPLEMENTAL NOTE

In the interest of being fair while researching this report, PSRA attempted to contact participants on both sides of the nuclear issues. Our initial contact attempts were made via e-mail and telephone calls.

Several persons in Ontario Hydro returned our telephone and e-mails, and subsequently allowed us to review documents such as the Bruce NPD Safety Report as a part of our on-site research. Although we were not permitted to photocopy or photograph Ontario Hydro's documents, they did provide a quiet room, candid talk, several technical volumes about their facilities, and permitted us to make written notes of that material.

We found AECL's Mr. Gadsby to be extremely well-versed not only in AECL's project, but also in the political realities of both Russia and the United States. During our telephone conversation Mr. Gadsby stated that "AECL always understood that CANDU Reactors would have to share the MOX program because of political and financial interests of the nuclear power reactor operators in the United States."

PSRA also tried to contact "anti-nuke" organizations. We were not successful, therefore the information presented above is based on the research developed from the cited resources. It is telling that even without the input from anti-nuclear activists, that the information that is currently available has overwhelmingly convinced us that the use of MOX Fuel in CANDU Reactors is not the best disposal option.

MD236

US DOE needs to hear your voice NOW!

1. Should Clean Up be the sole mission at Hanford?
☒ Yes ☐ No 1
2. Should the United States Government maintain its longstanding policy against the use of weapons Plutonium to fuel civilian nuclear reactors?
☒ Yes ☐ No 2
3. Which alternative would you prefer to see the US Department of Energy pursue:
Immobilization (encasement of plutonium in glass-like tombs) ← THIS, BUT NEITHER
Or
The MOX plan (burning plutonium to fabricate fuel for use in a civilian nuclear reactor)? IS PERMANENTLY ACCEPTABLE 3
4. Should Plutonium, to be used for processing and fabrication of MOX fuel, be imported to the Hanford site along the Columbia River?
Yes ☒ NO 4
5. How concerned are you about the transportation of Plutonium through the Northwest?
Not concerned slightly concerned ☒ very concerned completely opposed
B. How concerned are you about the transport through the Northwest of fuel containing weapons Plutonium?
Not concerned Slightly concerned Very concerned ☒ Completely opposed 5
6. Should commercial nuclear power plants be allowed to run on MOX fuel containing weapons Plutonium?
Yes ☒ NO
B. Should they be subsidized with tax dollars to do so?
Yes ☒ NO 6
7. Should MOX fuel containing weapons Plutonium be used to restart the FFTF reactor at Hanford to produce Tritium for nuclear bombs?
Yes ☒ No

Name DAVID REIF
Address 5405 NW Mallory Portland OR 97201
Phone 331-3910

Please return this to:
Hanford Action
25-6 NW 23rd Place #406
Portland, OR 97214
(503) 235-2531

MD291

MD291-1

DOE Policy

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

MD291-2

Nonproliferation

U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel. The use of U.S. surplus plutonium in existing domestic, commercial reactors does not involve reprocessing (reprocessing is a chemical separation of uranium, transuranic elements [including plutonium], and fission products from spent reactor fuel and the reuse of the plutonium and uranium to produce new fresh fuel). The proposed use of MOX fuel is consistent with the U.S. nonproliferation policy and would ensure that plutonium which was produced for nuclear weapons and subsequently declared excess to national security needs is never again used for nuclear weapons. Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program.

MD291-3

Alternatives

DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of

surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Under the hybrid approach, approximately 33 t (36 tons) of clean plutonium metal and oxides would be used to fabricate MOX fuel, which would be irradiated in domestic, commercial reactors. The remaining 17 t (19 tons) of surplus, low-purity, nonpit plutonium is not suitable for fabrication into MOX fuel because of the complexity, timing, and cost that would be involved in purifying those plutonium materials. Therefore, fabricating all 50 t (55 tons) of surplus plutonium into MOX fuel is not a reasonable alternative and is not analyzed; however, immobilizing all of the surplus plutonium is analyzed. Given the variability in purity of the surplus plutonium to be dispositioned, some of the plutonium currently considered for MOX fuel fabrication may also need to be immobilized. The incremental impacts that would be associated with a small shift in materials throughput are discussed in Section 4.30.

MD291-4

Transportation

The shipment of nuclear material (e.g., depleted uranium) using commercial carriers would be the subject of detailed transportation plans in which routes and specific processing locations would be discussed. These plans are coordinated with State, tribal, and local officials. The shipment of waste would be in accordance with the decisions reached on the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997). The transportation of special nuclear materials is the subject of detailed planning with DOE's Transportation Safeguards Division. The dates and times that specific transportation routes would be used for special nuclear materials are classified information; however, the number of shipments that would be required, by location, has been included in this SPD EIS. Additional details are provided in *Fissile Materials Disposition Program SST/SGT Transportation Estimation* (SAND98-8244, June 1998), which is available on the MD Web site at <http://www.doe-md.com>.

MD291-5**MOX Approach**

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program.

MD291-6**DOE Policy**

As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. In December 1998, the Secretary of Energy decided that FFTF would not play a role in producing tritium.

Additional Comments:

Given that the military is responsible for the weapons-grade plutonium, the cleanup and for the production of waste material with no projected technology for safe disposal, I feel it essential that the military be responsible for that production. Both commercial & government pay for the cleanup without further impact on the taxpayer. This, to me, means existing military budget funds can be used for research & development of disposal means that truly meet standards for environmental & human safety factors. Given that private companies have produced far worse substances, they should bear the primary burden of paying for clean mistakes, even at the expense of other operations.

In short, existing profits & budget of the commercial/military nuclear energy experiment are the only funds properly spent to correct the waste disposal problem in a prompt & environmentally safe fashion.

It was seriously stupid to play with this material in any way in the first place. This was all predictable from the onset & we have hurt our health & our planet severely at Chalk Point, 3 Mile, Rocky Flats, Hanford, etc. Why play again with this ignorant MOX program? Shut it down, get rid of it, don't make the victims pay twice.

MD291

MD291-7

Cost

DOE acknowledges the commentor's concern regarding funding responsibility for weapons-grade plutonium disposition and cleanup, and opposition to the MOX approach. Funding for the U.S. surplus plutonium disposition program is allocated annually by Congress, which is committed to the goals and objectives of the program. However, funding policies are beyond the scope of this SPD EIS.

The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. To accomplish this goal, DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.



United States
Department
of Energy

Comment Form

NAME: (Optional) Courtney Scott
 ADDRESS: 2639 NW Clackamas, Portland ME 97232
 TELEPHONE: (503) 288-6142
 E-MAIL: scottwork@teleport.com

I am opposed to the use of MOX fuel for nuclear energy or other commercial plutonium purposes. It is unfortunate that nuclear weapons ever proliferated in this country. Surely, the enormous problems of cleaning up the waste should have as a lesson ~~that~~ ^{not} the further creation of weapons of mass destruction. I recommend immobilization ^{and vitrification} as the best solution I have heard of so far. Profit should not play a part in the decision whatsoever. If nuclear power corporations wish to use MOX fuel, at the very least they should pay for it to take the burden off the taxpayer. I doubt they would agree to that.

If you are unsure about responding to public opinion, please consider where your current plan of action for disposing of surplus plutonium. NO MOX.

ORD11

ORD11-1

Alternatives

DOE acknowledges the commentor's opposition to the MOX approach to surplus plutonium disposition. The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. To this end, surplus plutonium would be subject to stringent control, and the MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing.

DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

SPURGEON, NICK
PAGE 1 OF 1

My name is Nick Spurgeon and I live in Portland, Oregon, and I'm leaving a comment about the Hanford nuclear plant and the proposed plans to use the plutonium from warheads for nuclear energy. I think that's insanity. I think the Department of Energy should put its energy into exploring alternative energy sources like solar. Stop spending our money on poison that's going to kill us. I'm really sick of it and I'm really disgusted with it. Thank you.

1

PD038

PD038-1

Other

DOE acknowledges the commentor's opposition to the MOX approach and support of alternative energy sources. Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

TRACY, NANCY LOU
PAGE 1 OF 1

August 18, 1998

Bill Richardson
 Secretary of Energy
 100 Independence Ave.
 Washington, D.C. 20585

Dear Secretary Richardson,

This evening concerned citizens meet with DOE officials to discuss destruction of our nation's surplus weapons plutonium. If the object we seek is to destroy this deadliest of all nuclear elements, we'll turn it into glass. We need to be clear that we have the same objective in mind. The choices under discussion do not bear this out.

The one: to immobilize our entire supply into glass logs. The other: to put 2/3s of this plutonium into MOX fuel for commercial nuclear reactors, a dangerous breach in separation of military weapons production and commercial reactors.

The MOX option is little more than a transit system for moving plutonium - with all of its attendant risks to workers and the public - 100% of plutonium into MOX fuel, 99% plutonium remaining as waste, 1% destroyed.

Because MOX appears to be the DOE's choice, it seems that destruction of plutonium is not its objective. It is hard to understand the DOE's continued advocacy for nuclear power with its nightmare history of accidents. In a 5-city area around the Pilgrim nuclear power plant in Mass., following a silent, invisible accidental release of radioactive gases, the leukemia rate among children is 4 times the national average. To throw a load of plutonium into the fuel of commercial reactors and hope for some kind of safe retrieval of the 99% remaining is insanity.

If MOX is to be used as a means of stockpiling plutonium for future weapons production, should the case be made that preparing for war is the best means for insuring a lasting peace, then that is what we should be talking about.

Why does the DOE continue its single-minded advocacy of nuclear power with its accident-prone history and legacy of overfilled, leaking, explosive-hot waste sites of which Hanford is a prime example? It's time we stopped messing up lives of future generations.

I have a dream that one day in my lifetime the USDOE will advocate for safe, clean, efficient alternative energy sources. What a joyous use of our tax dollars that will be!

Sincerely,

Sub
 731
 200

Copies to Senators Smith and Wicker

FD203

FD203-1

Alternatives

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again. Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program.

FD203-2

MOX Approach

The DOE acknowledges the commentor's opposition to nuclear power. The goal of the surplus plutonium disposition program is to reduce the threat of nuclear weapons proliferation worldwide by conducting disposition of surplus plutonium in the United States in an environmentally safe and timely manner. Converting the surplus plutonium into MOX fuel and using it in domestic, commercial reactors is an effective way to accomplish this. The objective of reactor irradiation is plutonium disposition, not power generation. Section 4.28 was revised to discuss the potential environmental impacts of operating Catawba, McGuire, and North Anna, the reactors that would use the MOX fuel.

FD203-3

DOE Policy

The purpose of the MOX approach is to convert surplus plutonium to a form that meets the Spent Fuel Standard, thereby providing evidence of irreversible disarmament and setting a model for proliferation resistance. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

The U.S. Department of Energy needs to hear you voice NOW!
What do you think about a new era of nuclear proliferation?

Hanford Action of Oregon will forward this questionnaire to USDOE. Please circle your responses.

1. Should clean-up be the sole mission at Hanford?
☒ Yes ☐ No 1
2. Should the United States government maintain its longstanding policy opposing the use of weapons plutonium to fuel civilian nuclear reactors?
☒ Yes ☐ No 2
3. Should commercial nuclear reactors be allowed to run on MOX fuel containing weapons-grade plutonium?
☐ Yes ☒ No 3
- 3a. Should they be subsidized with tax dollars to do so?
☐ Yes ☒ No 3
4. Which alternative would you prefer to see the U.S. Department of Energy pursue:
Immobilization (encasement of plutonium in glass logs or in casks for entombment)
OR
The MOX plan (processing plutonium into fuel for use in civilian nuclear reactors). 4
5. How concerned are you about the transportation of plutonium through the Northwest to Hanford?
Not concerned Slightly Concerned Very Concerned ☒ Completely opposed 5
6. How concerned are you about transporting plutonium MOX fuel through the Northwest to Hanford?
Not concerned Slightly Concerned Very Concerned ☒ Completely opposed 5
7. Should MOX fuel be used to restart the Fast Flux Test Facility (FFTF), a risky liquid-metal reactor at Hanford, to produce tritium for nuclear bombs?
☐ Yes ☒ No 6

Name Nancy Lou Tracy
Address 7310 SW Pine St. Portland OR 97223
Phone 503-246-6190 e-mail _____

Please return to Hanford Action of Oregon by September 10, 1998.

Hanford Action of Oregon

25-6 NW 23rd Pl. #406 tel: (503) 235-2924 fax: (503) 736-0097 e-mail: hannie@aol.com

With what I have twice read is a 400 billion price tag for cleaning up Hanford - we must get on with the job - however! overwhelming the odds of complete success. Those businesses which want

MD298

MD298-1

DOE Policy

DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

MD298-2

Nonproliferation

U.S. policy dating back to the Ford Administration has prohibited the commercial, chemical reprocessing and separation of plutonium from spent nuclear fuel. The use of U.S. surplus plutonium in existing domestic, commercial reactors does not involve reprocessing (reprocessing is a chemical separation of uranium, transuranic elements [including plutonium], and fission products from spent reactor fuel and the reuse of the plutonium and uranium to produce new fresh fuel). The proposed use of MOX fuel is consistent with the U.S. nonproliferation policy and would ensure that plutonium which was produced for nuclear weapons and subsequently declared excess to national security needs is never again used for nuclear weapons. Consistent with the U.S. policy of discouraging the civilian use of plutonium, a MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program.

MD298-3

MOX Approach

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would

displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract. The commercial reactors selected for the MOX approach include only those reactors whose operational life is expected to last beyond the life of the surplus plutonium disposition program.

MD298-4**Alternatives**

DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Under the hybrid approach, approximately 33 t (36 tons) of clean plutonium metal and oxides would be used to fabricate MOX fuel, which would be irradiated in domestic, commercial reactors. The remaining 17 t (19 tons) of the surplus, low-purity, nonpit plutonium is not suitable for fabrication into MOX fuel because of the complexity, timing, and cost that would be involved in purifying those plutonium materials. Therefore, fabricating all 50 t (55 tons) of surplus plutonium into MOX fuel is not a reasonable alternative and is not analyzed; however, immobilizing all of the surplus plutonium is analyzed. Given the variability in purity of the surplus plutonium to be dispositioned, some of the plutonium currently considered for MOX fuel fabrication may also need to be immobilized. The incremental impacts that would be associated with a small shift in materials throughput are discussed in Section 4.30.

MD298-5**Transportation**

The shipment of nuclear material (e.g., depleted uranium) using commercial carriers would be the subject of detailed transportation plans in which routes

and specific processing locations would be discussed. These plans are coordinated with State, tribal, and local officials. The shipment of waste would be in accordance with the decisions reached on the *Final Waste Management Programmatic Environmental Impact Statement for Managing Treatment, Storage, and Disposal of Radioactive and Hazardous Waste* (DOE/EIS-0200-F, May 1997) and the *WIPP Disposal Phase Final Supplemental EIS* (DOE/EIS-0026-S-2, September 1997). The transportation of special nuclear materials is the subject of detailed planning with DOE's Transportation Safeguards Division. The dates and times that specific transportation routes would be used for special nuclear materials are classified information; however, the number of shipments that would be required, by location, has been included in this SPD EIS. Additional details are provided in *Fissile Materials Disposition Program SST/SGT Transportation Estimation* (SAND98-8244, June 1998), which is available on the MD Web site at <http://www.doe-md.com>.

MD298-6

DOE Policy

As discussed in Section 1.7.4, Appendix D was deleted because none of the proposals to restart FFTF currently consider the use of surplus plutonium as a fuel source. In December 1998, the Secretary of Energy decided that FFTF would not play a role in producing tritium.

to have a second run of profit from plutonium need to be told "no". To impose further risk to commerce and industry of the area is foolhardy. The Columbia River, for many centuries ahead, will not roll on clean, safe and productive as it has for eons past. It is long past time to put plutonium, incredible killer that it is, permanently out of commission.

7

MD298

MD298-7**DOE Policy**

As described in Section 4.26.1.2, surface water would not be used in the construction and operation of proposed surplus plutonium disposition facilities at Hanford. In addition, there would be no discharges of contaminated wastewater to the Columbia River. Therefore, no impacts on the Columbia River would be expected.

The remainder of this comment is addressed in response MD298-1.

Hi. My name is Lee Ann Ward and I live in Portland, Oregon, down river from Hanford and I strongly object to the Department of Energy trying to produce fuel or anything else at Hanford and would like to see it cleaned up and nothing more done there. It's destroyed our river and the environment around here and I am very, very much opposed to any further use of Hanford for any production of fuel. Please, just clean up the mess that is there and leave it alone. Thank you.

1

PD037

PD037-1

Alternatives

DOE acknowledges the commentor's opposition to siting the proposed surplus plutonium disposition facilities at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.



1998-010168 Aug 31 P 1:59

United States
Department
of Energy**Comment Form**

NAME: (Optional) Rayner Ward
 ADDRESS: 2235 N. Alberta Portland, OR 97217
 TELEPHONE: ()
 E-MAIL: Rayner1@Juno.com

I would like to go on record as one who is against the MOX program in any form, & think that the best scenario for the future of all plutonium on the earth would be to vitrify it and load it on site, at least it can't begin with, not to be moved anywhere and above ground one of the most turbulent problems of our time is the creation, use & proliferation of fissile materials of all kinds from the conventional nuclear waste generated thereby. Despite the hype, misplaced optimism & many modern technophiles, there is no viable solution to this "three" problem at present. Nuclear power in all its forms is responsible for massive pollution of the earth, widespread disease and death, the governmental, industrial, bureaucratic, financial attempts to control it are laughable. Though I am thankful that, eventually, we will not have to face MOX at Hanford I am a skeptic on any plan that we are with united states should face the specter of MOX. It is an unfortunate & sure to be nuclear waste from abroad for us to deal with. The transportation problem alone is an insurmountable one. Some fissile materials outside united states, hopefully (I don't want hold my breath) a new enlightened future people will be able to solve the problem or until the half-life periods are over, in the case of plutonium, some 250,000 years.

Rayner Ward
 P.S. I don't buy the "what-if-the-Russians make double argument" don't it time to stop trying to frighten people into going along with insane policies. The U.S. needs to set a good example, i.e. achieve any & all use of fissile materials including nuclear fuel and medical isotopes.

MD164

MD164-1**Alternatives**

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

The surplus plutonium disposition program is limited exclusively to U.S. surplus plutonium and not to foreign plutonium. Transportation impacts of the MOX approach are summarized in Chapter 4 of Volume I and Appendix L. As indicated in Section 2.18, no traffic fatalities from nonradiological accidents or LCFs from radiological exposures or vehicle emissions are expected. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

Yes, hello my name is Mona Warner. I'm calling from Oregon and I would like to express my opposition to the MOX plan to use fuel for making energy. I really feel very strongly that this is a bad idea. It's a lot, it will cost a lot more, the disposition is close, it's a lot slower and it possesses a much greater possibility of proliferation of nuclear power and I really would like to encourage anyone who is in any position to stop the idea of the generation of this fuel. And I think we should have it in storage and put it away until we can figure it out, figure out what to do with it safely and so that it is not helping proliferate nuclear, what could be eventually nuclear war, who knows. But I would like and, and I would like to express that feeling. Thank you very much. Good-bye.

1

PD048

PD048-1

Alternatives

DOE acknowledges the commentor's opposition to the MOX approach. The use of MOX fuel in domestic, commercial reactors is not proposed in order to produce energy. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

The MOX facility would be built and operated subject to the following strict conditions: construction would take place at a secure DOE site, it would be owned by the U.S. Government, operations would be limited exclusively to the disposition of surplus plutonium, and the MOX facility would be shut down at the completion of the surplus plutonium disposition program. For reactor irradiation, the NRC license would authorize only the participating reactors to use MOX fuel fabricated from surplus plutonium, and the irradiation would be a once-through cycle with no reprocessing. By working in parallel with Russia to reduce stockpiles of excess plutonium, the United States can reduce the chance that weapons-usable nuclear material could fall into the hands of terrorists or rogue states and help ensure that nuclear arms reductions will never be reversed. Converting the surplus plutonium to more proliferation-resistant forms allows a lesser, albeit still high degree of custodial care than maintaining facilities for the material in its current form. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.



United States
Department
of Energy

Comment Form

9-3-98

NAME: (Optional) Holly Whitney
ADDRESS: 2235 N. Alberta St.
TELEPHONE: (503) _____
E-MAIL: hollywit@juno.com

I attended the MOX hearing that was held in Portland, OR, last month. I noted that a lot of befuddling and complex jargon was used in the initial presentation. If these hearings are ever going to be truly "public", the language should be simplified. In addition, where are these hearings being advertised? Public airwaves? Why not? Public television? Why not? How about using some of the mainstream AM radio stations to advertise? 1

I am opposed to the MOX proposal for 2 reasons:
A) the transportation of radioactive waste is not safe (especially from Russia!)
B) I want the waste stream to END NOW. No more processing, no more emissions. 2

I would like to see vitrification of all existing waste, without transporting it.
Lots of Americans are dying of cancer, and we know that radiation is linked. Let's get wise. 3

Thank you,

Holly Whitney

MD160

MD160-1

General SPD EIS and NEPA Process

DOE has and will continue to work toward the goal of presenting technical information, in writing or verbally, in readily understandable language and avoid the use of jargon (technical slang). Specifically, the aim is to provide information at a high school comprehension level. Because the disposition of surplus plutonium is a technically complex program, DOE must use some scientific and technical terms in order to accurately describe how DOE proposes to dispose of surplus plutonium, and the environmental effects of taking those actions.

MD160-2

General SPD EIS and NEPA Process

For all public hearings, DOE placed ads in large-circulation newspapers in the hearing areas and provided public service announcements for area commercial and public radio stations. Notification was also provided by means of mailing lists, Web site announcements, and bulletin boards at each DOE site. Individual notices were also mailed to over 5,000 members of the public who had expressed an interest in the program.

MD160-3

Transportation

DOE acknowledges the commentor's opposition to the MOX approach and transportation of MOX fuel. Surplus plutonium would be shipped from Russia to the United States as a result of the alternatives being evaluated in this SPD EIS. Transportation would be required for both the immobilization and MOX approaches to surplus plutonium disposition. Transportation of special nuclear materials, including fresh MOX fuel, would use DOE's SST/SGT system. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material. The transportation requirements for the surplus plutonium disposition program are also evaluated in this SPD EIS. As indicated in Section 2.18, no traffic fatalities from nonradiological accidents or LCFs from radiological exposures or vehicle emissions are expected.

DOE is committed to waste minimization and pollution prevention and is doing everything in its power to limit the amount of waste that would be

generated during this process. As described in Section 2.18.3, the potential impacts of waste generation and emissions due to the MOX approach are expected to be minor.

MD160–4

Alternatives

DOE acknowledges the commentor's preference for immobilization in glass at the site where it is currently located. This EIS evaluates the environmental impacts of immobilization in ceramic and glass at Hanford and SRS. The option of immobilization was considered in the *Storage and Disposition PEIS*, but only Hanford and SRS were chosen in the ROD because these sites have, or are scheduled to have, the infrastructure to provide the needed HLW or cesium radiation barrier to make the immobilized plutonium meet the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors.

MD160–5

Alternatives

The Atomic Energy Act of 1954 authorizes DOE to establish standards to protect health or minimize dangers to life. Radiation protection standards are based on controlling radioactive releases to ALARA levels in recognition of the potential risk of radiation exposure. The extremely small cancer risks presented in this SPD EIS are a direct result of the small quantities of material (e.g., plutonium) expected to be released from the proposed facilities. Calculation of these cancer risks is based on methodologies presented in *Health Effects of Exposure to Low Levels of Ionizing Radiation*, BEIR V (1990).

WOMAN'S INTERNATIONAL LEAGUE FOR PEACE AND FREEDOM
BARBARA DRAGEAUX
PAGE 1 OF 1



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August 18, 1998

RE: Surplus Plutonium Disposal

I'm speaking as co-chair of WILPF (Women's International League for Peace and Freedom). Our ROI (Region of Influence) includes more than 42 National Sections around the world. I believe that I can represent the position of our members as against the use of plutonium for the production of energy, for weapons or any other active use. We insist that the only proper future for plutonium is containment in a permanently unusable form such as vitrification.

Re-ordering the U.S. Federal budget has long been a priority of U.S. WILPF. WILPF has developed a "Woman's Budget" in the past and an updated version is currently being prepared. It is my view that Longsuffering Citizen Funders are not interested in seeing their tax assessments used to further the goals of Maximally Enriched Institutions whose demands for federal dollars encourage the use of this dangerous substance in yet to be designed (at government expense) facilities. To continue to bill us for the risky transport of plutonium and its proposed by-products (such as MOX) back and forth across the country; to continue to impose on us the cost of the dealing with the resulting waste; and to add to the wealth of corporate vultures at our expense is beyond reason. Our NOI (Notice of Intent) is that we will gather all the resources within our ROI to demand that weapons plutonium be properly and permanently disposed of . . . at Hanford, in the northwest and anywhere else in the U.S.

Barbara Drageaux, co-chair
 WILPF: Portland Branch
 4811 NE 31
 Portland, OR 97211
 503-284-3116

ORD08

ORD08-1

Alternatives

DOE acknowledges the commentor's opposition to the MOX approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Transportation would be required for both the immobilization and MOX approaches to surplus plutonium disposition. Transportation of special nuclear materials, including fresh MOX fuel, would use DOE's SST/SGT system. Since the establishment of the DOE Transportation Safeguards Division in 1975, the SST/SGT system has transported DOE-owned cargo over more than 151 million km (94 million mi) with no accidents causing a fatality or release of radioactive material. The transportation requirements for the surplus plutonium disposition program are also evaluated in this SPD EIS in Chapter 4 of Volume I and Appendix L.

Use of MOX fuel in domestic, commercial reactors is not proposed in order to subsidize the commercial nuclear power industry. Rather, the purpose of this proposed action is to safely and securely disposition surplus plutonium by meeting the Spent Fuel Standard. The Spent Fuel Standard, as identified by NAS and modified by DOE, is to make the surplus weapons-usable plutonium as inaccessible and unattractive for weapons use as the much larger and growing quantity of plutonium that exists in spent nuclear fuel from commercial power reactors. The MOX facility would produce nuclear fuel that would displace LEU fuel that utilities would have otherwise purchased. If the effective value of the MOX fuel exceeds the cost of the LEU fuel that it displaced, then the contract provides that money would be paid back to the U.S. Government by DCS based on a formula included in the DCS contract.

Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

July 28, 1998

U. S. Department of Energy,

Like other people say clean Hanford
clean up nuclear waste. Our country
doesn't need surplus plutonium.
If D.O.E. agreed billion dollar deal
with British company to begin
converting waste into glass will
take years.

Jane Wood
Portland, OR

MD005

MD005-1

Purpose and Need

DOE acknowledges the commentor's opposition to new missions at Hanford. DOE believes that Hanford's efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

Dear Email submission. Sept. 15 11:30 pm PDT. I was in attendance at the Portland, Oregon, public meeting on the SPD EIS, although I did not speak at that meeting. I ask that the following be considered as my comment on the subject.

I am opposed to a policy of Mixed Oxide Fuels processing, this is an expensive non-solution to the problem of nuclear waste. MOX is perpetrated primarily by those who will profit economically from it.

In the long run, it will be far more more expensive in dollars and ultimate human misery than declaring Plutonium a waste and diligently setting the good example of entombing it with reliable oversight. It is now well known that MOX programs will result in a large net increase in nuclear waste, and will encourage similar practices worldwide by people even less well prepared than ourselves to attempt such folly.

Also I do not want to allow anything but active waste clean-up to occur at the Hanford, Washington site. Hanford, though over 120 miles distant from the 3 million people in the Portland metro area, will be a real threat to long term livability in our beloved region unless a competent clean up program is conceived, adhered to, and fully carried out. (As someone who has observed and followed events at Hanford for over fifteen years, I say "Yes, the pro-nuclear zealots have backed off a bit, but they still desire to make their fortunes in the same misguided way; by devising ever more elaborate and unworkable schemes to make use of an inherently dirty and dangerous power source that is even now only barely understood because it's real damage is

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WD022

WD022-1

MOX Approach

DOE acknowledges the commentor's opposition to the MOX approach. DOE has identified as its preferred alternative the hybrid approach. Pursuing both immobilization and MOX fuel fabrication provides the United States important insurance against potential disadvantages of implementing either approach by itself. The hybrid approach also provides the best opportunity for U.S. leadership in working with Russia to implement similar options for reducing Russia's excess plutonium in parallel. Further, it sends the strongest possible signal to the world of U.S. determination to reduce stockpiles of surplus plutonium as quickly as possible and in a manner that would make it technically difficult to use the plutonium in nuclear weapons again.

Although cost will be a factor in the decisionmaking process, this SPD EIS contains environmental impact data and does not address the costs associated with the various alternatives. A separate report, *Cost Analysis in Support of Site Selection for Surplus Weapons-Usable Plutonium Disposition* (DOE/MD-0009, July 1998), which analyzes the cost and schedule estimates for each alternative, was made available around the same time as the SPD Draft EIS. This report and the *Plutonium Disposition Life-Cycle Costs and Cost-Related Comment Resolution Document* (DOE/MD-0013, November 1999), which covers recent life-cycle cost analyses associated with the preferred alternative, are available on the MD Web site at <http://www.doe-md.com> and in the public reading rooms at the following locations: Hanford, INEEL, Pantex, SRS, and Washington, D.C.

As described in Sections 2.18.3 and 4.28.2.8, additional spent fuel would be produced by using MOX fuel instead of LEU fuel in domestic, commercial reactors. Spent fuel at the proposed reactor sites is not expected to change dramatically due to the substitution of MOX assemblies for some of the LEU assemblies. Likewise, the additional spent fuel would be a very small fraction of the total that would be managed at the potential geologic repository. Decisions on the surplus plutonium disposition program will be based on environmental analyses, technical and cost reports, national policy and nonproliferation considerations, and public input.

done over TIME, something that humans cannot buy, make, or ultimately control.”

Please have the foresight to realize, the solution to high level waste is clean-up, vitrification, or some other carefully controlled entombment, and the active persuasion of other countries to do the same.

Thank you.
Brad Yazzolino
Portland, Oregon

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WD022

WD022-2

Alternatives

DOE acknowledges the commentor’s opposition for siting the proposed surplus plutonium disposition facilities at Hanford. DOE believes that Hanford’s efforts should remain focused on its current high-priority cleanup mission. The importance of cleanup at Hanford was taken into consideration in identifying preferred sites for surplus plutonium disposition activities. However, no decision has been made, and DOE will continue to consider Hanford for surplus plutonium disposition or other programs that are compatible with the Hanford mission.

